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FOOD INDUSTRIES

NATIONAL EDITION

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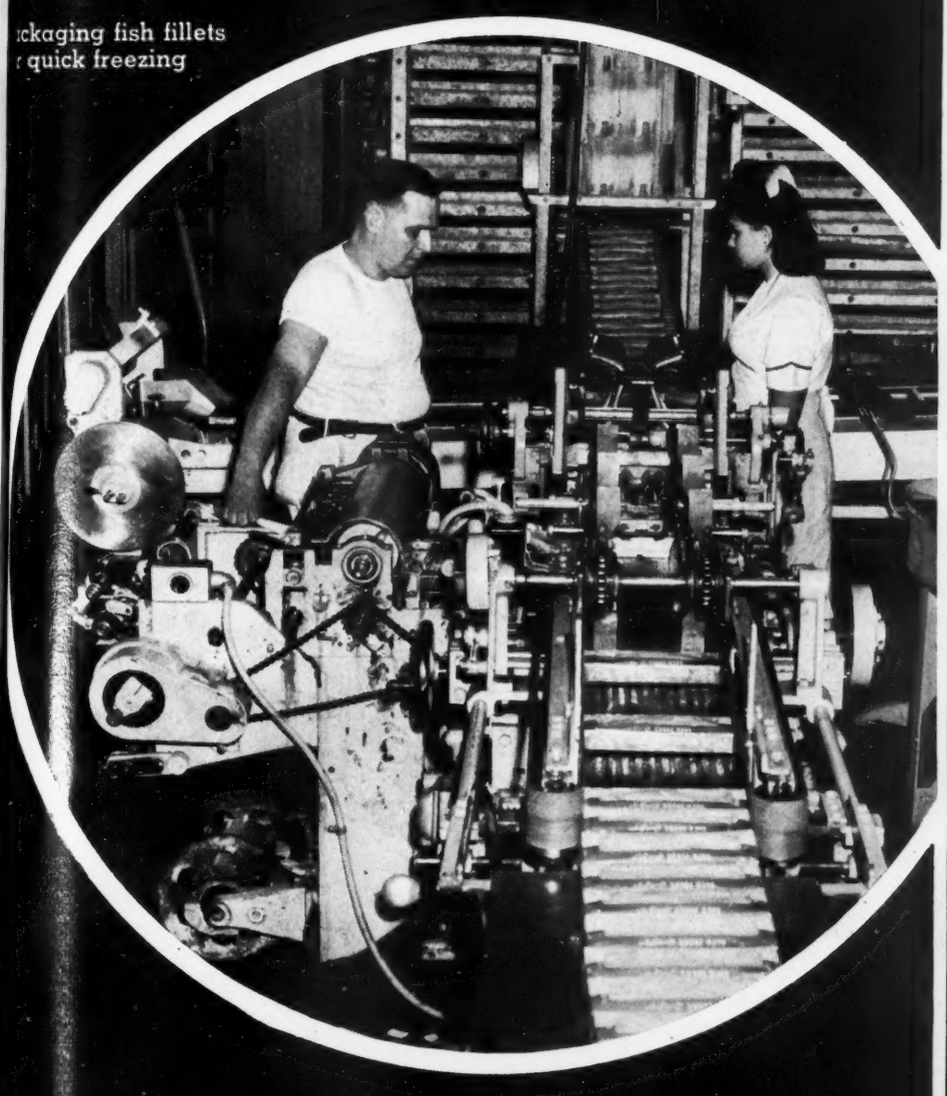

ckaging fish fillets
quick freezing

NOVEMBER 1948

New Labor Formula Succeeds at Ritter's

Novel Food Plant Without Walls

A & P Speeds Fish Packaging, Freezing

Advanced Technics At National Biscuit

Reducing Costs in Pickle Production

Progress Report On Meat Packing

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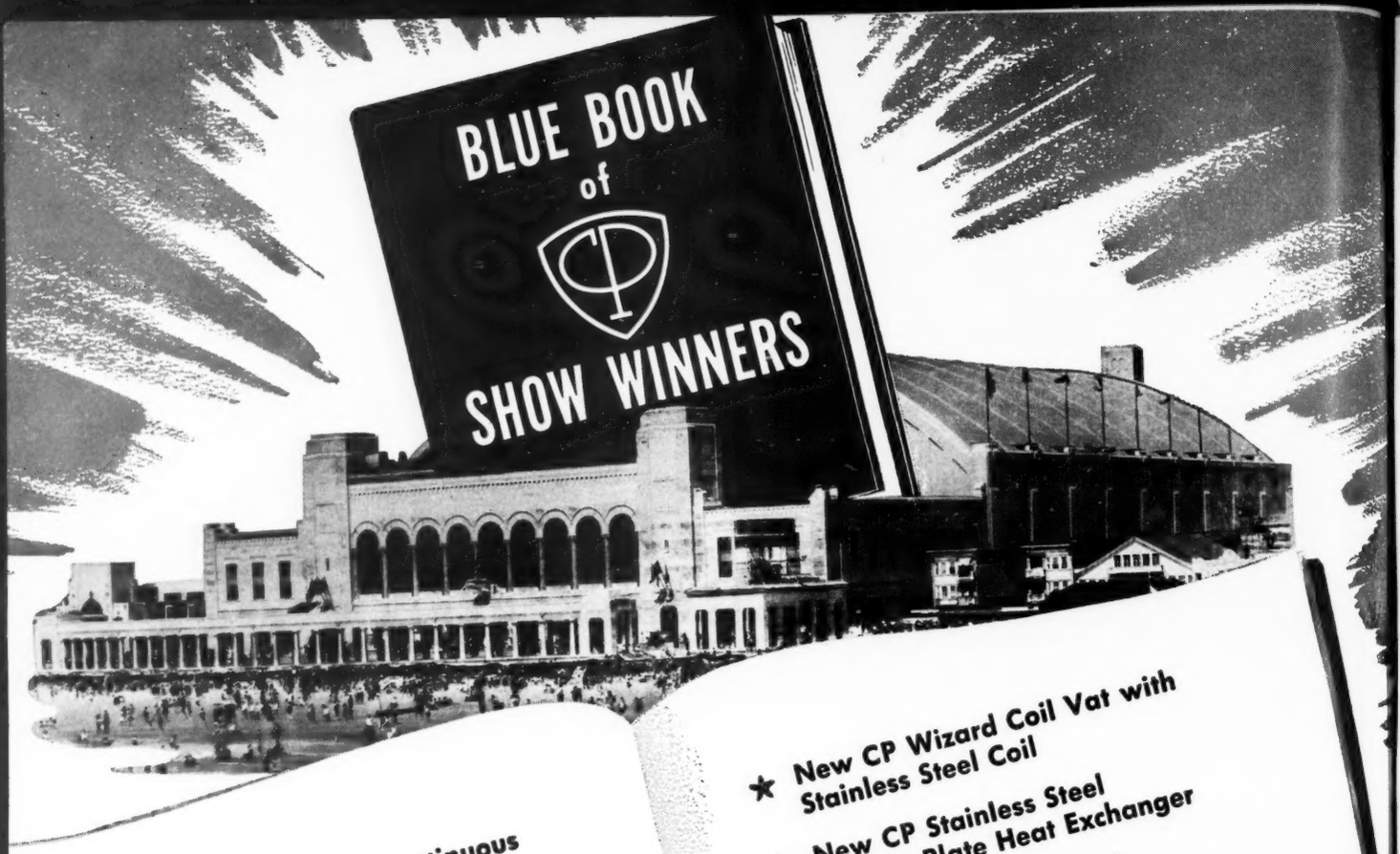

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FOOD INDUSTRIES

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THE COVER—Battle Creek wrapping machine overwraps 55 cartons of Cap'n John's fillets per minute with a moisture-proof cellophane at the Boston fish plant of A & P Tea Co. Cellophane, fed to machine from roll, is cut to size, wrapped around carton, then heat sealed. Packages go into Birdseye plate freezer. Story on page 77.

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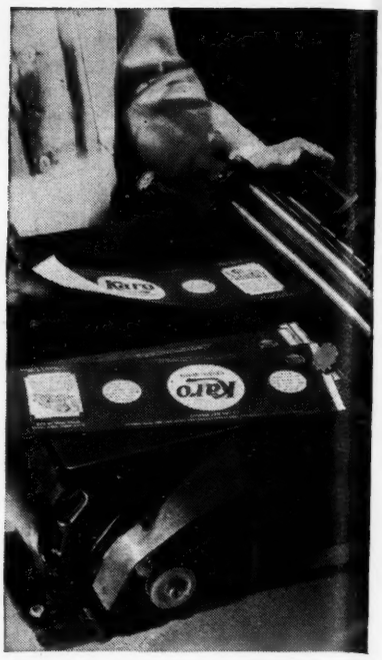

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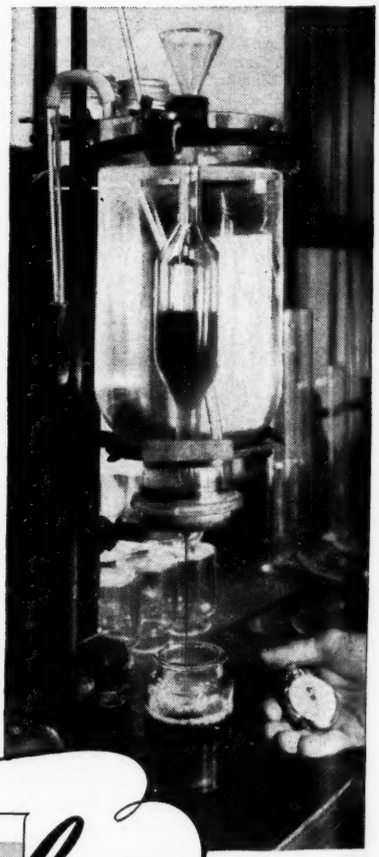

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FOOD INDUSTRIES

NOVEMBER, 1948

What the Election Means to You

By the time you read this, the election will have been held and the men designated who will run the government for the next four years. The policies of the administration are certain to have an important influence on the food industry. And since this industry is the largest of them all and is of basic importance in the economy of the country, it will be a wise administration which pays close and enlightened attention to its many problems.

Abundant food production—one of the most powerful weapons of war—is more than ever required if we are to feed our people properly, at reasonable prices, and successfully wage the struggle for peace abroad. While the demand for American food abroad has been decreasing somewhat, a fair amount of surplus production—in excess of domestic requirements—is needed. Europe still wants grain, in particular, even though her harvest this year was improved.

It is likely that a program of firm price support for farmers will be followed by the administration. Both parties believe that such support is needed to avoid a farm-instigated recession and to assure an adequate supply of food. This indicates that the supply will be plentiful and that food processors will be able to buy raw materials at prices that will be about midway between "high" and "low."

This price support operation, however, carries with it the responsibility of highly efficient administration. Otherwise the country's so-called revolution in agricultural methods may produce surpluses so big as to flood the market with some of the basic commodities and cause a breakdown of support prices. This was threatened by the bumper crops this year. Excessive production also throws a burden on the taxpayers and causes ill-will not only toward the government but toward the food industry.

It is to be hoped that the Department of Agriculture does not advise farmers to follow procedures which will result in waste or in price increases to consumers. It should not, for example, set the production goal of any product so high as to produce a great excess which must be paid for at parity prices, as in the famous example of the potatoes that were sold by the government at a fraction of their cost.

Another problem faced by the administration is that of conservation of the soil. Much more needs to be done in this direction if further depletion of fertility is to be avoided.

There is reason to believe that the people in power in Washington will recognize these problems, but there is equal reason to feel that they will need some prodding to handle them effectively. So food processors, with their intimate knowledge of the factors involved, ought to use their influence in the right direction.

Trust-busting activities of the government are of considerable concern to the food processing industries, too, as the large meat and dairy companies well know. These are likely to continue. So food manufacturers would be well advised to take measures which will take the "heat" off of them. This means that they should tell the public, and the government, more about the excellent job they are doing in giving the consumers high-quality products at a small margin of profit.

Since orderly disposal of surplus foods is likely to be a problem, the administration should be encouraged to take advantage of a government-sponsored joint farmer-processor-distributor program to push the sale of items which get ahead of demand. This system has been used on a hit or miss basis in the past, but the government would do well to set it up on a permanent basis.

Such a program would mean the establishment of a federal agency to keep continuing public inventory of production, supply and demand of all farm products. Then joint marketing agreements would be worked out among processors and distributors to move surplus commodities quickly into consumption.

J K Lawler

EXECUTIVE EDITOR

The Talk of the Industry

• AMONG the high points of the annual meeting of American Meat Institute were smoked turkey and barbecued turkey served by Custom Food Products, Inc. Here was food to tickle the palate of the gourmet—especially that barbecued fowl. But these products really are not smoked nor barbecued. The flavor and a tenderizing action are obtained by injection into the meat of enzyme preparations.

• PERHAPS the Department of Justice action against the "big four" meat packers will be something besides a waste of time and money for the packers. It gives these companies a wonderful opportunity to convince the public that their profit per pound of meat is not a significant factor in the retail price of the product. It also gives the packers a chance to tell the world that their processing operations have been extremely efficient from way back—so far back that the automobile industry borrowed the assembly line from the slaughterhouse.

• FROZEN FOOD packers, in critical condition in 1946 and still somewhat shaken and dazed in 1947, find themselves practically recovered in 1948.

For a time, they were not quite sure whether their good health was real or apparent—one never knows in these days of acute psychoses whether one is really sick and feels well or really well and feels ill.

But on August 30 the last doubt was swept away; the frozen food industry knew it was in very truth recovered—a leading financial journal said so.

Yes, the same specialist that in 1946 almost dealt the infant industry its death blow by declaring that its condition was diseased and that there was a drying up of its wet nurses, the financiers—has now assured the patient that he is in good condition and likely to live to a ripe old age.

• ALREADY the surplus pot begins to boil. The huge corn and wheat crops threaten to throw the parity-price support program into the billion-dollar class next year. Many a Congressman wishes the adjustable parity-price scheme had been put into effect in 1949 instead of being slated for 1950. But it's too late to change it now. Farmers already have accepted the '49 price-floor as a commitment.

Department of Agriculture officials also are fretting. They have been promoting the idea that more grain should be shipped abroad under the Marshall Plan. But ECA Director Hoffman says that the Marshall program was intended to put the free nations of Europe back on their feet and not to "subsidize" U. S. industry and agriculture. In other words, the ECA job is to raise the capacity of European countries to produce so that they can trade with other nations to get the things they need.

Frankly, Mr. Hoffman makes a lot more sense than the Department of Agriculture boys, especially since Europe's own food supply is up this year. A Western Europe with booming industries and lots of well-paid labor will offer a long-range market for American foods, and not a give-away market either.

• TWENTY-SEVEN well-known food technologists will serve on the committee which selects the winner of the 1949 FOOD INDUSTRIES Award for achievement in food technology. All are connected with universities.

Incidentally, there are only 51 more working days in which to enter your company's process in the competition. And don't wait until the last few days, or you may not have enough time to get together the most effective presentation of the process. Like Christmas shopping, do it early.

• A LEADING corn products manufacturer has adopted a new formula to stabilize its business. At one time a producer of bulk products only, the company now maintains a 60-40 ratio of bulk to consumer products. In times when corn prices are too high for a comfortable profit margin, the consumer business comes to the rescue.

• BREAKFAST continues to be the forgotten meal. For the average person in the city, it is strictly a hit-and-run affair. There is a fundamental reason. City people get to bed late, need to sleep late. This doesn't leave them enough time for a good breakfast. Maybe cereal manufacturers and home economists can change this situation somewhat by educating consumers to the health value of an adequate breakfast. But that desire for another 40 winks of sleep is tough competition for the pleasure of eating in the morning.

Maybe it would be easier to cultivate the liking for a midnight snack, by providing special easy-to-digest slumber foods.

Hors d'Oeuvres

• *Mead Johnson sales declined in the first half of 1948 because, says the company, sales of one of its principal infant foods was closely related to the birthrate, which declined this year. Wish they'd tell what sales of their other infant foods were tied to.*

• *Farm Journal* tells of an elevated cow milking platform, used by a Michigan farmer, which brings the cow to "udder level." Saves 24,090 "deep squats" a year with only eleven cows, says *F. J.* Nice thing about it is that, apparently, it doesn't interfere in the least with shallow squats.

• *Two West Coast brewers are testing carry-home baskets, similar to the cola types, so the housewife can lug home the beer. Guess the old bucket of suds is really gone to stay.*

• They are developing fish sandwich spreads at the Fish & Wildlife Laboratories, College Park, Md. Preliminary tests, it is said, show that all fish taste the same with heavy seasoning. We found this out with catsup, many many Fridays ago.

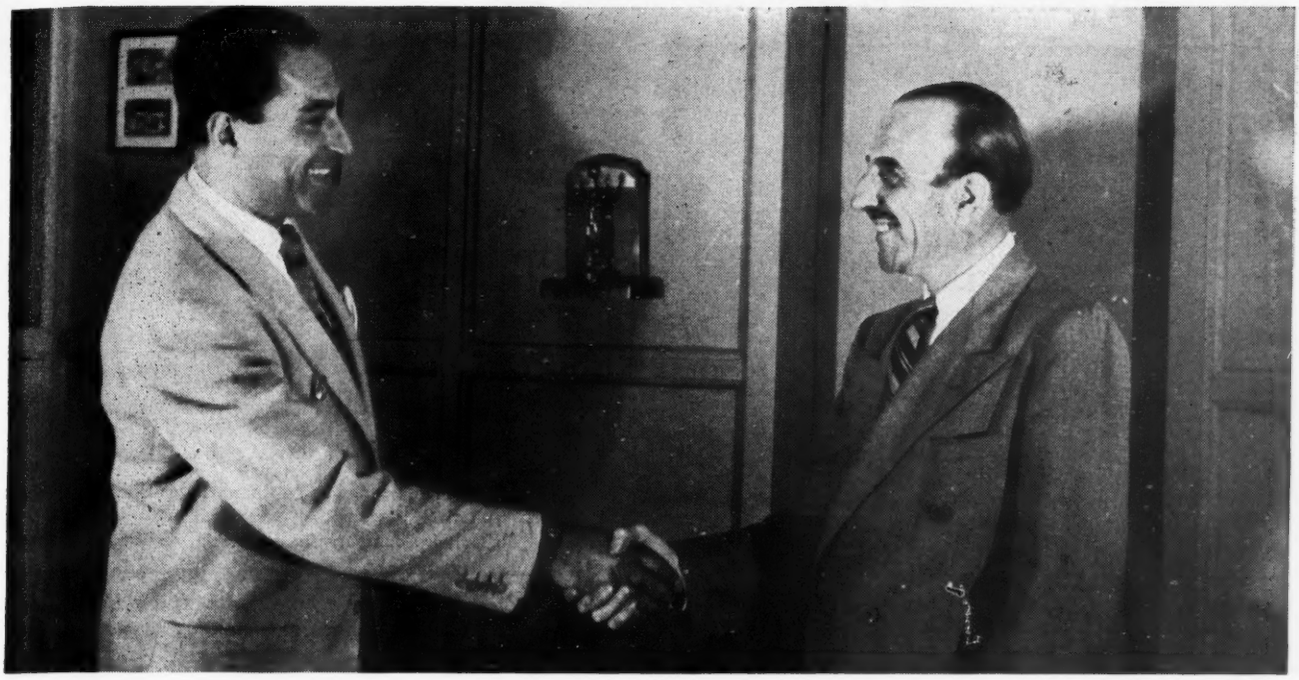
• *Protecktol is a food ingredient that is said to modify unchangeable proteins and carbohydrates; stimulate sensory nerves of the mouth and throat, producing taste satisfaction; act as an antioxidant and a preservative; and emulsify true fat and oil, achieving non-separating emulsions of all viscosities. The stuff boasts even more capabilities, but you had better ask Francony Laboratories, Jamaica, N. Y., about it. Looks as though food technologists may now take a vacation.*

• A New York *Herald-Trib* story leads with, "New Yorkers will soon be able to buy 'get well' cards and powder puffs in the same stores they purchase pork chops and canned peaches." A little pessimistic, perhaps—but—mighty thoughtful if one is having dinner guests.

• *Two-way cattle, we have now learned, are those sold into yards then sold out again for more feeding. This wasn't explained when the term was first popped at the AMI convention, leaving us in a state of confusion more utter than usual.*

• Now that you can buy two drumsticks for the price of a turkey, all you have to do is prop them at the correct angle on the meat loaf and use your charm to convince the family that Thanksgiving is here.

J.A.J.J.



Union President Leon B. Schachter — Company President William H. Ritter, Jr.

Ritter's Mutual Trust Formula For Management-Labor Relations

Significant Innovations

- Monthly Merit-Rating of Both Workers and Supervisors
- Management Functions Opened to Union Stewards
- Quick Settlement of Grievances at Operational Level
- Incentive Pay for Production Workers
- "Teamwork" Specially Sponsored

Outstanding Results

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- Workers' Wages Up Fully 300 Percent in 8 Years
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BY IVAN C. MILLER
Editorial Consultant
"Food Industries"

NINETY-FOUR YEARS of plant operation without a strike is an enviable record. Ninety-four years without a single man-hour lost because of labor difficulties is a rare achievement.

This is the record at the P. J. Ritter Co., Bridgeton, N. J., whose employees for the last eight years have been members of Meat & Cannery Workers Union, Local 56, and Teamsters Union, Local 767, both affiliates of the American Federation of Labor.

Why has this company been free of labor difficulties when labor troubles have been so general? How does it get along so well with the union when so many fail?

Division of responsibility is part of the answer.

Ritter's shares with its union labor many of those responsibilities which managements generally have considered functions (prerogatives) they dare not relinquish. Here, these responsibilities have been justifiably intrusted to labor on the basis of a joint management-labor employee-rating system.

Not only are workers rated, but foremen and supervisors as well. A high degree of ability at the foreman level is another factor in the successful handling of labor.

Extensive use of the incentive pay plan for production-line workers has helped to keep employees happy and reduce unit labor costs. And speedy handling of grievances at the operational level has kept little troubles from growing into big ones that would have to be smoothed out by top management.

Play-by-Play Picture Story of Wage Negotiations

Labor and Management State Their Cases, and . . .

APRIL 23—In first contract-renewal talk, Meat & Cannery Workers' Schachter (left) cites rising cost of living cutting into workers' earnings. He asks for a very large wage hike.

APRIL 30—Next meeting finds President Ritter (right) telling of high costs weighing on company and summing up other factors making it difficult for company to meet such demands.

But the real foundation for these phenomenal achievements is mutual trust between labor and management. This was not achieved overnight. It took time. But it has proved well worth the effort involved.

Labor relations were above average at this plant before employees were unionized. These relations have improved since. And with the improvement has come a material increase in production per man-hour. All told, it is something new.

Both President W. H. Ritter, Jr., and the officials of the union agree that the plan is a real departure. They also agree on the elements which make the program workable.

"Just Good Business"

Bill Ritter says: "Our continual effort to reach the best possible relationship between management and employee is just good business. The managements of many other companies undoubtedly will consider some of our working arrangements with our employees as 'concessions.' In this they are right according to their viewpoint. But we have found these 'concessions' profitable—so we consider them just good business.

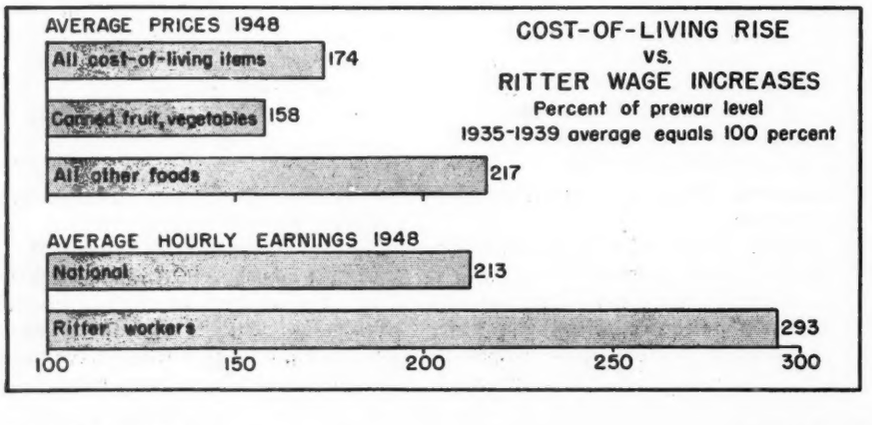
"During the eight years our employees have belonged to the union, we have learned that the building of workable arrangements between management, union and its membership is not easy, but certainly not impossible. We have learned it is not as simple as merely signing a contract once a year. It must be worked for 24 hours every day.

"What is it we all seek? It seems to me as simple as this—*mutual trust.* And that's something you can never take for granted.

"Of course, establishing a satisfactory working arrangement between management, union and membership requires mutual effort. It's never one-sided. However, mutual effort is only possible if management takes the lead. Management *has* taken the lead here at our plant, and both the union and its membership have cooperated. Management-labor relations have progressed more rapidly and profitably since the AFL unionized our plant in 1940 than before."

L. B. Schachter, president of the Meat & Cannery Workers Local, said the P. J. Ritter Co. made it possible for the union to cooperate—that when the union wanted to solicit employees for membership, the management neither objected nor interfered. As soon as the union had the backing of 51 percent of the employees, the company recognized the union without requiring an election. At no time since has the management competed with the union.

In this period, the union has learned to trust the management, and the management has reason to trust the union. Nevertheless, when the management suggested that the union share the responsibility of evaluating the worth of every employee as a basis of promotion and advancement of wage, the union would accept the proposal only on a trial basis. That was in 1943.



What System Provides

The joint union-management merit rating of employees continues to work effectively with full union approval. This employee rating system provides a method for—

1. Fair upgrading of employees on ability and performance at any time.
2. Settling grievances and disputes speedily and satisfactorily.
3. Bolstering employee morale.
4. Reducing absenteeism.
5. Basing layoffs on relative efficiency as well as seniority.
6. Increasing productivity per man-hour.

When the first union contract was signed, a labor-management committee was formed to check on contract performance. Minutes of the weekly committee meetings indicate that, at first, the major accomplishment was discussion of ideas taken from the suggestion box.

Grievances and complaints were difficult to handle. There was no yardstick for measuring the relative ability and performance of employees. Too often it was a case of foreman or supervisor opinion against union steward opinion—union vs. company, each naturally defending "me and mine."

The company therefore suggested a system of rating each employee every

(Continued on Next Page)

. . . Points are Compromised in Give-and-Take Sessions, Which . . .

MAY 2—Talks continue, and now some concessions have been made. But agreement on a contract is still distant. Labor Steward Bertolini is seen (left) voicing additional union arguments.

MAY 25—New optimism is inspired when Ritter and Schachter review earlier understandings. Then Company Employee Director McCormick (left) asks union to moderate its last demands.

month, and it asked that the union share equally with management the responsibility for this rating.

Rating Procedure

Each month the department supervisor or foreman and the union steward jointly fill out and sign an Employee Rating Report for each employee (see illustrations of reports, page 75). For acceptance, steward and foreman must agree on each employee rating. Whenever they fail to agree, the disputed rating is submitted to the department superintendent for arbitration. So far, only three reports have been arbitrated.

When a rating is signed it is posted as a part of the permanent records which constitute a running account for each employee. These posted reports are kept in a Kardex file system, which shows at a glance those employees above average rating, and those below.

The individual's posted record over a period of time indicates whether he is improving, slipping or holding his own. If an employee continues above average in rating, he is automatically in line for upgrading. If his rating remains low or declines, a warning from the steward is certain.

Here are the ten rated qualities and the points alloted:

Quality	Points
Interest	5
Knowledge	10
Quality (of workmanship)	10
Cooperation	10
Judgment	10
Initiative	10
Reliability	10
Conduct	10
Health	5
Effort	20
Total	100

Each quality is carefully explained on the rating report in order to insure that both steward and supervisor are as accurate as possible in judging. "Conduct" is explained thus: "Does he show any personality weaknesses (temper, temperament, moral qualities) which might affect his efficiency? Get angry easily? Drink on the job? Resent direction and proper supervision? Go off half-cocked? Talk too much?"

A natural question is, "Can such an arbitrary system be accurate and fair?"

The answer is, "It is workable." Each employee can at any time review his ratings and ask for a hearing before the labor-management meetings if he considers the rating unfair. He may feel his rating of 80 is too low, but he will admit his fellow worker rated 85 has more skill, and he is satisfied to be rated above the other fellows whose abilities he knows are less than his.

Grading has been accepted by the membership as fair. The rating system, as practiced at Ritter's has worked. Excerpts from labor-management meetings will be quoted in this article to give proof.

Upgrading

Frequent requests for upgrading of employees, based on their rating, appear in the minutes of the weekly labor-management meetings. A typical example follows:

Meeting of Nov. 26, 1946

The following cents-per-hour upgradings were recommended: (Worker A), rating 77, 2½c.; (Worker B), rating 79, 5c.; (Worker C), rating 85, 10½c.; (Worker D), rating 80, 5c.; and (Worker E), rating 88, 2½c.

At the end of the asparagus canning season this year, there were openings for twelve additional regular employees. On the asparagus lines, many of the workers are seasonal employees holding temporary union cards. They are rated only at the termination of the seasonal employment, the scores providing a basis for determining future employment. From this group, the twelve with the highest ratings were chosen for regular employment and accepted by the union for full membership. Six were negroes.

Upgrading requires the approval of union stewards, as the following minutes explain:

Meeting of Feb. 18, 1947

The employee relations director opened the meeting by fully explaining the system (employee rating and the purpose of the weekly labor-management conferences) to newly elected union stewards. The need for friendly and sincere cooperation between the company and the union was stressed. The employee history records and the method of keeping them in the employee relations department were also explained. And the routine of handling upgradings, grievances, attendance, and other matters at the weekly conferences, was discussed in detail.

The employee relations director said that Ritter's was the only factory, to the best of his knowledge, where the union was given the right to share equally the

Ratings . . . And Results

A review of Apr. 1946 employee-ratings showed 12 workers below average. The union then conferred with each of these workers, and what transpired in the following months is indicated below. Earlier-month ratings are included for reference.

Name	Monthly Scores Jan.	Feb.	Mar.	Apr.	May	June	July	Development
(Worker A)	78	80	70	*56*	78	82	82	Still employed
(Worker B)	80	84	80	*72*	90	92	91	Upgraded and promoted
(Worker C)	80	84	74	*72*	74	..	..	Discharged
(Worker D)	80	84	78	*66*	68	49	..	Discharged
(Worker E)	92	92	80	*66*	66	67	47	Discharged
(Worker F)	70	92	70	*66*	64	79	78	Still employed
(Worker G)	84	86	76	*66*	78	82	63	Still employed
(Worker H)	84	80	70	*72*	72	56	67	Still employed (Aug. rating 87)
(Worker I)	80	70	80	*65*	90	88	85	Still employed
(Worker J)	..	92	90	*68*	86	97	..	Upgraded, now salaried employee
(Worker K)	72	78	32	*58*	69	77	82	Still employed
(Worker L)	66	68	70	*62*	76	88	82	Still employed

Play-by-Play Story (Continued)

. . . Come Near to Impasse—Finally Averted When Both Sides Sign

JULY 6 AT 4 A. M.—Despite optimism, stalemate and a strike loom after eight hours in new session. Men are weary. Even so, they keep striving—and at 5:31 a.m. they reach agreement!

JULY 7—Contract is signed. Union V-P Hewitt (left) smiles broadly over the good bargain, and President Ritter beams satisfaction. McCormick (center) will help referee new contract.

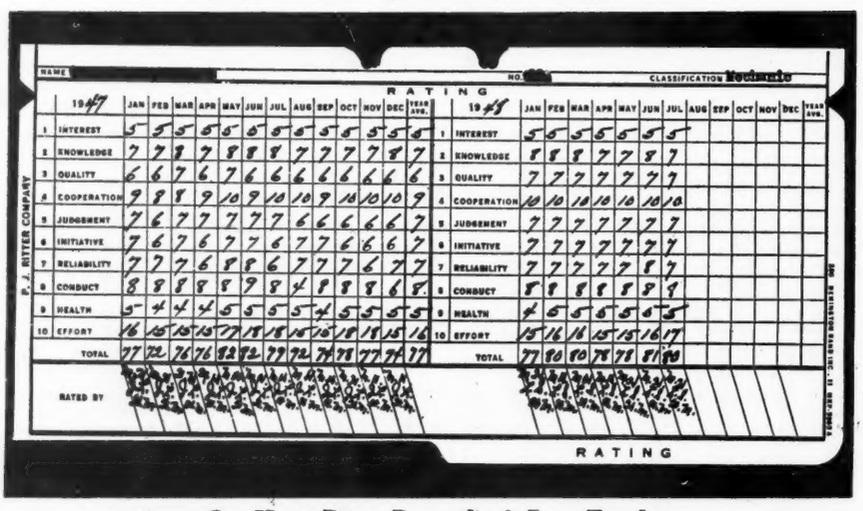
responsibility of the rating of workers, and where the union was permitted to act upon requests for upgradings within established rate ranges. He said that the company and the union president, Mr. Schachter, had agreed to give this system a trial several years ago, and that it had functioned extremely well to date because the union stewards and the company representatives had always dealt with the problems in a manner of fairness and impartiality.

He said he hoped the newly elected stewards would take their responsibility seriously and would act impartially in the matters that come before the committee, so that the spirit of the contract could be fully lived up to by both parties.

Now let us consider the misunderstanding and differences of opinion resulting in grievances and complaints, that are a part of business and industry. They occur at the top as well as the bottom. They are inherent in human relations. And they often are trivial, easily adjusted.

Trivial or not, when they reach top management and union officials they can become major issues involving principles—dangerously explosive. An immediate and satisfactory settlement of grievances and complaints ends the situation before an issue can develop.

Personnel Girl Quickly Puts Finger . . .



NAME _____ NO. _____ CLASSIFICATION Mechanic

RATING

1947	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR AVG.
1 INTEREST	5	5	5	5	5	5	5	5	5	5	5	5	5
2 KNOWLEDGE	7	7	7	7	8	8	8	7	7	7	7	8	7
3 QUALITY	6	6	7	6	7	6	6	6	6	6	6	6	6
4 COOPERATION	9	8	8	9	10	9	10	10	9	10	10	10	9
5 JUDGMENT	7	6	7	7	7	7	7	6	6	6	6	6	7
6 INITIATIVE	7	6	7	6	7	7	6	7	7	6	6	6	7
7 RELIABILITY	7	7	7	6	8	8	6	7	7	7	6	7	7
8 CONDUCT	8	8	8	8	8	9	8	9	8	8	8	6	8
9 HEALTH	5	4	4	4	5	5	5	5	4	5	5	5	5
10 EFFORT	16	15	15	15	17	15	15	16	16	18	15	15	16
TOTAL	77	72	76	76	82	82	77	72	76	78	77	74	77

1948	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR AVG.
1 INTEREST	5	5	5	5	5	5	5						
2 KNOWLEDGE	8	8	8	7	7	8	7						
3 QUALITY	7	7	7	7	7	7	7						
4 COOPERATION	10	10	10	10	10	10	10						
5 JUDGEMENT	7	7	7	7	7	7	7						
6 INITIATIVE	7	7	7	7	7	7	7						
7 RELIABILITY	7	7	7	7	7	8	7						
8 CONDUCT	8	8	8	8	8	9	9						
9 HEALTH	4	6	5	6	6	6	5						
10 EFFORT	15	16	16	15	15	16	17						
TOTAL	77	80	80	78	78	81	80						

RATED BY _____

P. J. RITTER COMPANY

RATING

. . . On Up-to-Date Record of Any Employee

How Grievances Are Handled

The labor relations program at Ritter's attempts to end all differences fairly and immediately. So far it has. Union Vice-President Elmer J. Hewitt said that one of the best things about the program was that differences were quickly settled at the operations level, and that employee rating often was the yardstick which had speeded peaceful settlement.

The minutes of the weekly meetings not infrequently disclose complaints quickly disposed of after reference to the employee-rating yardstick. Here is an example from the minutes:

A complaint was made against (worker) by (Supervisor) who charged the employee with absenteeism, exceeding rest periods and loafing. Employee's job rating is 51, against a plant average of 76. Thereupon (department union steward) said he was familiar with the case and will give the employee a warning.

Subsequently, it was necessary to discharge this employee. But while such an employee-rating points a finger at a man who is slipping, it does not always result in his discharge. The minutes of the labor-management meet- of May 10, 1946 show that the head union steward was given a list of twelve regular workers whose April ratings were below average. The union

P. J. Ritter Company, Personnel Form No. 7-46

Confidential—Return to Personnel Dept.

TOTAL POINTS 81

EMPLOYEE'S NAME [redacted]

No. Month Rated Date FEB 1947

DEPARTMENT Closing

PRESENT POSITION Stripper

EMPLOYEE RATED BY G J Temme (Supervisor) Steward Ernest (Steward)

APPROVED BY Clair J. Bradway (Superintendent)

P. J. RITTER COMPANY

EMPLOYEE RATING REPORT

To be filled out jointly by Supervisor and Shop Steward and Checked by Superintendent.

INSTRUCTIONS — READ CAREFULLY

Each employee's ability and fitness in his PRESENT occupation or for promotion may be appraised with a reasonable degree of accuracy and uniformity, through this rating report. The rating requires the appraisal of an employee in terms of his ACTUAL PERFORMANCE. It is essential, therefore, that snap judgment be replaced by careful analysis. Please follow these instructions carefully:

1. Use your own independent judgment.
2. Disregard your general impression of the employee and concentrate on one factor at a time.
3. Study carefully the definitions given for each factor and the specifications for each degree.
4. When rating an employee, call to mind instances that are typical of his work and way of acting. Do not be influenced by UNUSUAL CASES which are not typical.
5. Make your rating with the utmost care and thought; be sure that it represents a fair and square opinion. DO NOT ALLOW YOUR PERSONAL FEELINGS TO GOVERN YOUR RATING.
6. After you have rated the employee on all ten factors, write under the heading "General Comments," any additional information about the employee which you feel has not been covered by the rating report, but which is essential to a fair appraisal.
7. Read all five specifications for Factor No. 1. After you have determined which specification most nearly fits the employee, place a check (√) at the proper point. Continue until you have rated the employee on all ten factors.
8. Complete this report by the 15th day of each month and return it to your superintendent.

If any serious defects have been noted on this record, or any listing is below average, have you brought the matter to the attention of the Employee? Explain what action has been taken.

Interest in cooperating and willing worker.

Sig G J Temme

Place a check (√) at point along line which you consider nearest accurate rating

1. Is Employee interested in his job? Does he want to "get ahead"? Does he like his work well enough to do it well? Is he "around when needed"?	5 Interested	4 Average	3 Mild Interest	2	1 Lacks
2. Has the Employee a satisfactory knowledge of his job? Does he know what he is doing? Why he is doing it? Does he plan his work? Handle his tools well?	10 Thorough Knowledge	8 Knows his job well	6 Average		
3. Is the quality of his work satisfactory? Does he dot his "i's", and cross his "t's"? Is he conscientious? Does his work reflect interest in the Company? Is his work done right?	10 Superior	8 Excellent	6 Satisfactory		
4. Does the Employee cooperate with his fellow workers for the welfare of all? Does he allow personalities to affect his work? Is he just with his subordinates, and honest with his supervisors? Does he carry out instructions thoroughly and cheerfully?	10 Always	8 Usually	6 Average		
5. Does the Employee show good judgment? Does he watch what he is doing? Think about it? Make good decisions under pressure? Does he say, "I never thought of that!"?	10 Superior	8 Excellent	6 Average		
6. Is the Employee progressive? Is he alert to better ways of doing his job? Does he make suggestions? Is he a clock-watcher? Is he interested in his own and the Company's future?	10 Superior	8 Excellent	6 Average		
7. Is the Employee reliable in his work? Can he be trusted with responsibility? To do a job without constant supervision? When he has finished a job do you have to have it done over again?	10 Thoroughly Dependable	8 Needs Little Supervision	6 Average		
8. Does he show any personality weaknesses (temper, temperament, moral qualities) which might affect his efficiency? Get angry easily? Fight? Drink on the job? Resent direction and proper supervision? Go off half-cocked? Talk too much?	10				
9. Is the Employee's health satisfactory? Is he ... illness? Is he ...					

4

SUPERVISORS RATING REPORT

NAME [redacted]

MONTH RATED August

DEPARTMENT Maintenance

PRESENT POSITION Elect. Supervisor

RATED BY Wm. McCall

Interest 9 points
Knowledge 18 points
Attitude (M) 4 points
Temperment 4 points
Responsibility 10 points
Reliability 10 points
Cooperation 10 points
Attitude (E) 4 points
Cleanliness 8 points
96

INSTRUCTIONS---READ CAREFULLY

Each supervisor or foreman is now doing a certain supervisory ... your department. As his superior, you have your own ideas of ... job should be done and what you expect from him. In the que... naire, there are nine important qualities which a foreman or ... visor should possess. The questions following each importa... are prepared to show to what extent the foreman or supervis... es these qualities.

The score is base on a maximum of 100 points, each qualit... at 10 points with the exception of knowledge which has a ... points.

IT IS YOUR DUTY TO BOTH THE COMPANY AND THE FOREMAN OR ... ANSWER ALL QUESTIONS ACCURATELY AND TO THE BEST OF YOUR ... TO ALLOW NO PERSONAL FEELINGS TO INFLUENCE YOUR DECISI...

Rating reports will be given to the superintendents o... each month and are expected to be returned to the Pl... by the 1st of the following month.

A. INTEREST

(1) Is the supervisor interested in his ... (0) No
(2) Does he want to get ahead? (1) Yes ... (0) No
(3) Does he do his work efficiently? (1) ... (2) Good
(4) Does he find better ways to do the ... (3) Efficiently X
(5) Are his suggestions helpful? (1) ... (0) No
(6) Is he developing or standing sti... (0) Standing Still

B. KNOWLEDGE

(1) Has the supervisor a thorough ... (3) Thorough X (2) Good
(2) Can he do all jobs in his dep... (1) Some ... employees how to do ...

- 2 -

D. TEMPERMENT

(1) What disposition is the supervisor? (2) Good X (0) Poor
(2) Does he get along with his employees? (1) Yes X (0) No
(3) Does he get along with the other supervisors? (1) Sometimes X (0) No
(4) Is he irritable at times? (1) No X (0) Yes
(5) Does he ever loose his head and "blow up"? (1) No X (0) Yes
(6) Does he work well under strain? (2) Well X (1) Poorly
(7) Is he excitable when things go wrong? (1) No X (0) Yes

E. RESPONSIBILITY

(1) Does the supervisor assume the proper amount of responsibility for the job? (3) Yes X (0) No
(2) Does he go to his superior with problems that he should take care of himself? (2) No X (0) Yes
(3) Does he, at times, assume too much responsibility? (1) No X (0) Yes
(4) Could he bear more responsibility than he is bearing now? (2) Yes X (0) No
(5) Does responsibility weigh heavily on him? (1) No X (0) Yes
(6) Does he like responsibility? (1) Yes X (0) No

F. RELIABILITY

(1) Is supervisor reliable? (2) Yes X (0) No
(2) Is he absent frequently because of illness? (1) No X (0) Yes
(3) Is he usually available when their is extra work? (2) Yes X (0) No
(4) Can you depend completely on him? (3) Completely X (2) Most of the Time (1) Sometimes
(5) Do you have to frequently check on him? (2) No X (0) Yes

G. COOPERATION

(1) Is supervisor cooperative? (2) Yes X (0) No
(2) Does he cooperate with other supervisors in his department? (2) Yes X (0) No
(3) Outside of his department? (2) Yes X (0) No
(4) Does he cooperate with persons below his status? (2) Yes X (0) No
(5) Is his cooperation questionable? (2) No X (0) Yes

H. ATTITUDE (Employees)

(1) Does supervisor "get along" with employees? (2) Well X (1) Fair
(2) Does he demand a day's work? (2) Yes X (0) No
(3) Is he too easy with them? (2) No X (0) Yes
(4) Is he too hard with them? (1) No X (0) Yes
(5) Is he quick to recognize inefficiency? (3) Always X (1) Sometimes
(6) Does he play favorites? (1) No X (0) Yes

I. CLEANLINESS AND APPEARANCE

(1) Is supervisor clean about his personal appearance? (1) Yes X (0) No
(2) Does he dress neatly? (1) Yes X (0) No
(3) Is his department clean and neat? (2) Fairly Clean (1) Seldom Clean (3) Always Neat X
(4) Is he watchful for clean and neat appearance of his employees? (1) Yes X (0) No
(5) Are his reports neatly done? (2) Yes X (0) No

agreed to have a conference with each of them regarding the low rating "in an effort to increase plant efficiency, and also to encourage each worker to try for better, higher-paying jobs." The status of these workers in subsequent months is revealed in an accompanying table, "Ratings . . . And Results" (p. 73).

Bolstering Morale

Studies of the attitude of those who labor for a wage have shown that one of the basic desires of this group is for security. Almost equally important is the desire for recognition by management—assurance that skill and effort is noted and accomplishment rewarded by advancement. This is a step along the road to security.

The employee rating system as practiced at Ritter's does insure the individual that his skill and accomplishments are watched by both management and the union. He sees his rating raised as his work improves. And his rate of pay is raised within the range as the result of his own efforts independent of the union's bargaining for the group. Morale is bolstered.

A problem in all industry is absenteeism. It is a major difficulty in the canning industry, with its peaks and valleys of production and employment. Employment rating has reduced absenteeism at Ritter's.

The study to determine the effect of employee rating on absenteeism was confined to regular employees, since only full-time employees with union membership are given the monthly ratings.

In 1947, the plant hired 1492 wage-earner employees, who worked 19,891 man-weeks. Average weekly employment was 383. There were an even 400 employees on the payroll Dec. 15, the end of the employment year. The yearly record showed a loss of 528 man-hours due to absenteeism, out of a total of 511,722 hr. worked by 400 employees—only 1.03% absenteeism. And this loss was due to the truancy of only 13 of the 400 employees.

For years, the company has worked on reduction of absenteeism among regular employees. An attendance bonus payable at Christmas helped. This was calculated at 2½c. per hour less deductions for absenteeism. However, the most important factor in maintenance of attendance has been the employee rating system leading to upgrading which averages approximately twice as much per hour as the Christmas bonus.

The workers know that absenteeism scores heavily against a man's rating—the rating which, if maintained above the average, leads to increased earnings not only for this year but also for coming years.

The plant's first incentive plan (p. 76, Oct. 1944 FOOD INDUSTRIES) was introduced in 1943 to pay on one production line a wage increase in direct proportion to the increase in production above an established norm. Today, the same plan not only continues on this line but it also has been instituted on others—all lines where the number and type of variables permit the use of incentives. And operations are now more profitable to employees and management than ever before.

The warehouse employees, members of the Teamster's Union, were offered an incentive plan in 1943. They turned it down at that time.

But this year they asked management for the plan. Success of the special production line incentives had brought all employees to prefer working on such an arrangement, and the Meat & Cannery Workers Union then asked that the entire membership be included in an incentive plan of the Ritter type.

It has not been possible to set up special incentives to apply to all union workers. Employee rating, however, serves as a general incentive for all, with upgrading and steady employment the rewards.

The coming of a layoff is a greater problem to seasonal than to non-seasonal industries. Though there may be full-time employment for a portion of the workers in seasonal industries, such enterprises do not attract the best in labor. That is all the more reason why at periods of forced layoffs seasonal industries wish to retain the best workmen. But the choice is not often management's.

A clause in most union contracts decides who goes, who stays. In pattern, this is the clause:

"If the number of regular employees is to be reduced, those who have been longest in the service of the company, by plant or departments, shall in such order be the last to be laid off, provided that such practice shall not affect the efficiency of operation."

Much discord between management and labor has resulted from interpretations of the layoff clauses in union contracts. Seldom in any company is there a record acceptable to the union which determines the worth of the individual employee. Minutes of the labor-management meetings at Ritter's show how important a joint management-union rating of employees can be:

Meeting of Nov. 14, 1947

Because of conclusion of seasonal operations, it has been necessary to lay off nine mechanics. The maintenance department superintendent submitted the following for layoff on Saturday next:

(Worker A) millwright—He has not measured up to expectations and his rating is considerably below the departmental average. It was pointed out by the committee that this layoff meant jumping seniority, but the department steward said he believed the layoff justified in the interest of departmental efficiency. Approved by Committee.

(Worker B) millwright—The committee questioned this layoff, since it would mean retaining (Worker C), a new employee who held only a fractional rating advantage over (Worker B). The Committee authorized (union steward) to investigate with the department superintendent before this layoff was approved.

(Worker D) maintenance laborer—Maintenance prefers to retain (Worker E), despite the fact that (Worker D) has greater seniority. (Worker E) is an exceptional worker, with a merit rating of 97, whereas (Worker D) is below average. Approved.

High wages and fair treatment of labor make for good labor relations and prevent costly strikes. They are ideals to strive for. But they are worthless if the price is a continued absence of profit.

Man-Hour Production

The wage rate at Ritter's has been increased almost 300% since the plant was unionized—and a considerable portion of the increase is due to upgrading.

Prices of canned foods have increased only 158 percent of the prewar level (chart p. 72). Although total production has increased faster than total

(*Continued on page 212*)

"Union Reporter" Praises Ritter and His Company

The August 1948 issue of the *Union Reporter*, official organ of AFL affiliates in the Tri-State area, said this of Mr. Ritter and his cannery:

"William H. Ritter, Jr., has been appointed a member of the Employee Relations Committee of the Grocery Manufacturers of America. The Bridgeton manufacturer has been prominent in the field of employee relations, having achieved national recognition for his "Golden Rule" formula for industrial peace.

"Sharing the spotlight have been members of Local 56. Through the past decade, the Union has secured increases well above the national averages, without the loss of a single hour of employment through strike or lockout. The 1948 cannery wage pattern was set for the New Jersey area by the Union and Ritter company in friendly negotiations.

"The P. J. Ritter Co. wrote the nation's first group life insurance policy for cannery employees in 1916, was a pioneer in industrial music and in-plant motion pictures, and has otherwise distinguished itself in the field of employee relations throughout its one hundred years of existence."

THIS new Cap'n John's line of fish and seafoods is being put up by A & P, which is selling under money-back guarantee.

Speed and Quality Engineered Into Fish-Freezing Operation

Guaranteed-quality consumer pack introduced by A & P. Special triple-protective package developed, highly efficient automatic packaging line installed, and a rigid six-check inspection control system established

By JOHN V. ZIEMBA
Assistant Editor
"Food Industries"

FISH of top quality at prices that are right for Mrs. Housewife has been the goal of the A & P Tea Co. fish department's quality control and packaging program.

The department insisted upon quality fish comparable to the fresh catch—with the price kept down.

So the company developed a new consumer-package line of fish and seafoods—put up under the Cap'n John's label. The fish had to be frozen in a special package under a rigid quality control system. Fillets suitable for the Cap'n John's line are cod, scrod, haddock, flounder, mackerel, rosefish, fluke, ocean catfish, fillet of grey sole, and fillet of lemon sole. Steaks put up under this label are cod, swordfish, Eastern salmon, ocean catfish, and fluke. Seafoods consist of cod cheeks, scallops, and minced clams.

Quality was assured through the development of a special package by the laboratory and the establishment of a rigid quality control system by key personnel.

Economy was achieved in the installation of a highly efficient filleting and packaging line by company engineers.

Today, this company, through its own National Fish Department at Boston, packs the new brand either in its own plants or under its direct supervision. Sales are exclusive in its own stores under a money-back guarantee. This operation is under the direction of Joseph C. O'Brien, general manager, National Fish Department.

Since the new consumer pack was first introduced early in 1945, sales have increased sharply in A&P stores.

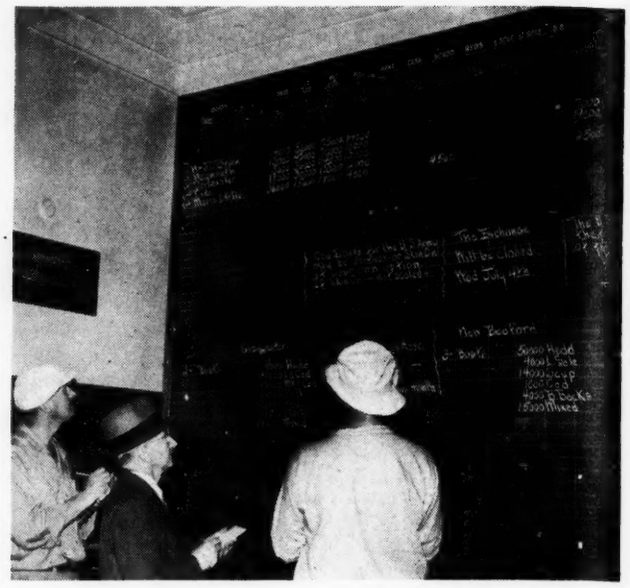
But, before the consumer package could be introduced, several problems were faced. The company had to—

1. Select acceptable quality varieties of fish for the new pack.
2. Develop a special package.
3. Install a high-speed packaging line.
4. Acquire high quality through an inspection system.
5. Devise adequate methods of shipping the frozen consumer-package.
6. Work out suitable means of self-servicing the packages in an attractive low-temperature display case.

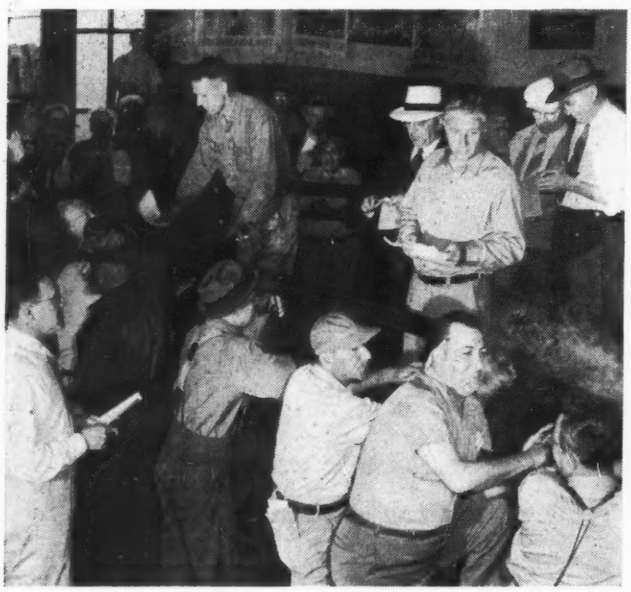
As for the first problem—selection of those quality varieties of fish that were suitable for packing under the Cap'n John's label—choices were made after a thorough screening of all varieties

Careful Buying of Fish Is Company's First Control on Quality

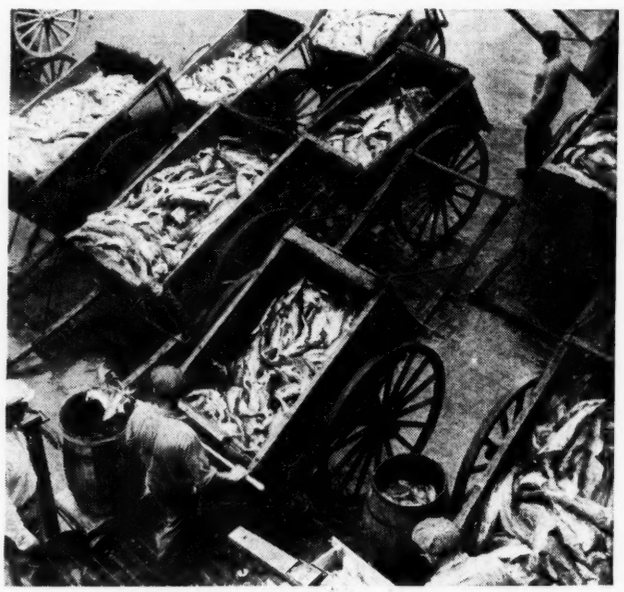
1. TRAWLERS dock alongside pier after returning from the fishing banks. Fish are now ready to go on auction.



2. BUYERS assemble in auction rooms, review listings on various boats, and figure approximate prices they will bid.



3. AGENTS representing the boat owners gather around buyers at auction stand. Buyers bid on various offerings.



4. FISH purchased by company buyer, R. Standley, are inspected as they are unloaded from boats into fish carts.

of edible fish, principally those caught along the Atlantic coast.

Two steps were used in the screening program: First, a taste panel was set up to evaluate the different varieties in a cooked and uncooked condition. Second, the laboratory put up experimental packs, held them under low-temperature storage, and tested them periodically.

Developing the Package

Design and development of a special package was the second problem to work out. Instead of the conventional short carton, an 8x3x1 in. container was designed to avoid folding the fillets when packing them. Moreover, this size carton stacks well in "home freezers." Finally, a cellophane window was designed to provide visibility of the contents.

After the carton's design was approved, extensive packaging tests were made to select materials which adequately protect the frozen fillets. Suppliers of cartons and wrappers were contacted, and sample materials were submitted to the laboratory for test purposes.

The package finally approved offers triple protection. It is constructed with a moistureproof cellophane liner that is glued to a printed carton which is laminated or cold water-waxed. The latter is then overwrapped with moistureproof cellophane.

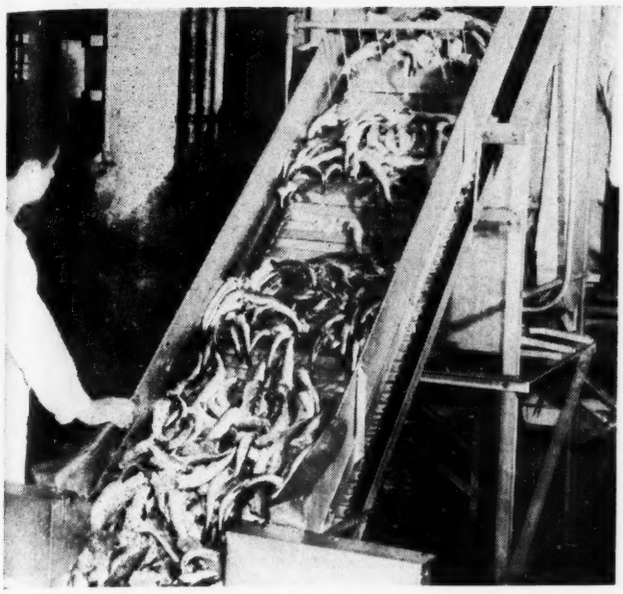
Now to the third problem—installation of a flexible, high-speed packaging line. Primary difficulty in packaging fillets at high speeds has been their varied sizes. For example, some like rosefish require six to twelve fillets to make a pound. Others like cod or haddock need only one or two.

Setting Up Packaging Line

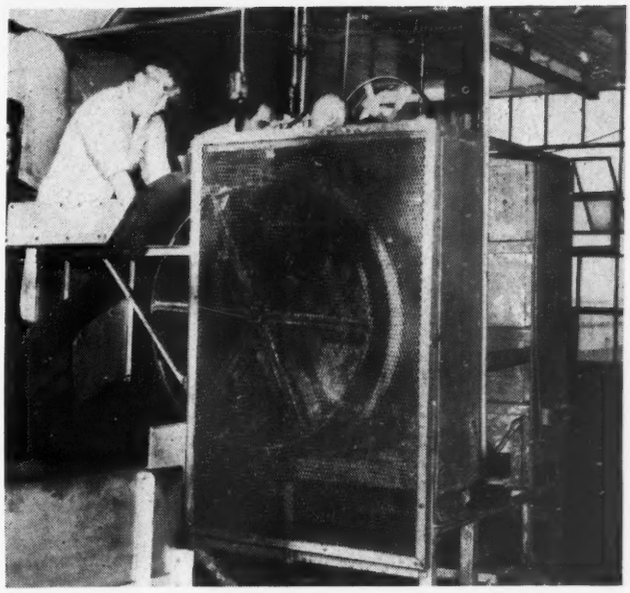
Because of these size variations, there is no machine available which can weigh and package fillets automatically into cartons to a 1-lb. net weight. Consequently, company engineers had to devise a rapid method of weighing and packaging fillets into consumer-size cartons by hand. Here is how it was done:

Two methods of weighing and pack-

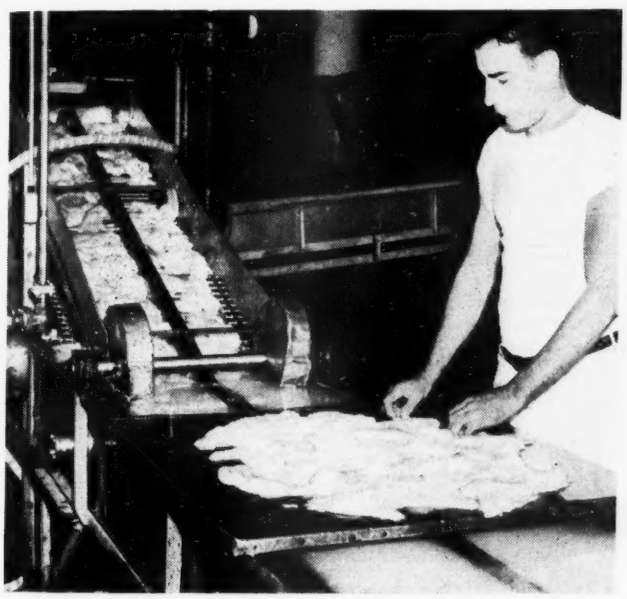
Conveyors and Automatic Equipment Speed Production



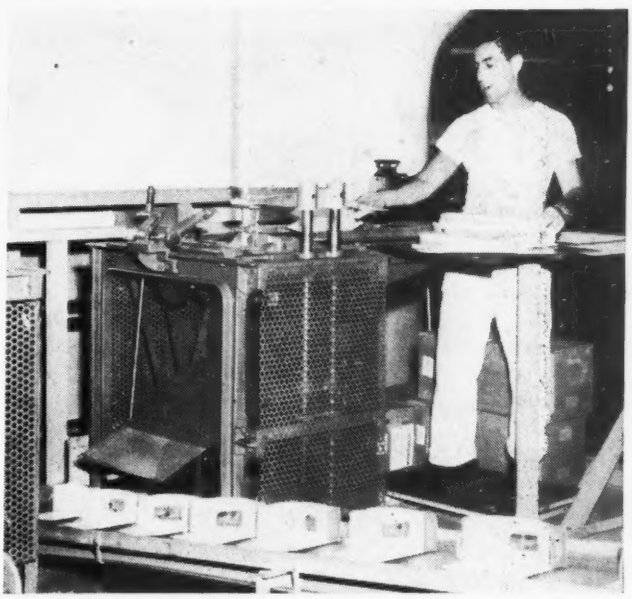
5. **ARRIVING at plant, fish are again inspected. Then they are put into whole-fish hopper that carries them to scaler.**



6. **AUTOMATIC machine removes fish scales. Fish are carried on wheel that presses them against de-scaling drums.**



7. **LEAVING scaler, fish are washed, cut into fillets, and then immersed for a short time in refrigerated brine tanks.**



8. **CARTON-forming machines automatically set up cellophane-lined cartons and deliver them to weighing and packing line.**

ing were set up for the fish packaging line. One, the check-weight system (where packages come out to a predetermined weight), was planned for the smaller fillets, like flounder, rosefish and gray sole. This method was adopted because the smaller fillets can be weighed to 1-lb. net weights more efficiently than the larger ones.

The other, the catch-weight method (where varied weights are accepted), was devised for the larger fillets, such as cod and haddock. This method was chosen over the check-weight system because too much time was taken up by the packer in selecting fillets to make even weights. Weights of 16 to 18 oz. are allowed, with actual weights to the nearest half-ounce stamped on the carton. A method of cross-cutting large fillets speeds this weighing-packing operation.

Controlling Quality

How to insure the high quality of the product under the money-back guarantee—the fourth problem—was licked by A & P through adoption of a six-check inspection system. This is how it worked:

Starting with the purchase, inspectors at the fish pier constantly look over the fish being unloaded from the holds of the fishing vessels. Then the fish are again inspected when they reach the plant and before they are processed. These plant inspectors determine whether the fish will be packed as whole fish, fresh fillets or the frozen consumer pack.

After the fish are "tagged" for the Cap'n John's line, samples of the first fillets to be cut are submitted to the laboratory, where they are cooked and then judged by a taste panel.

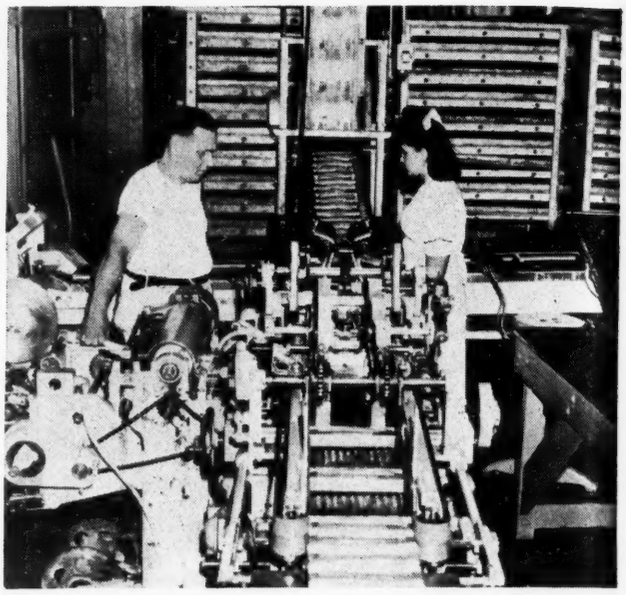
If the fillets meet the specifications, processing continues. Inspection, however, does not stop here. Each cutter and packer discard those fillets that are not top quality.

The fillets get their final inspection after they are frozen and held in storage. Such an inspection is inventory-controlled by the laboratory and production department.

Development of adequate methods of shipping the packages to stores and

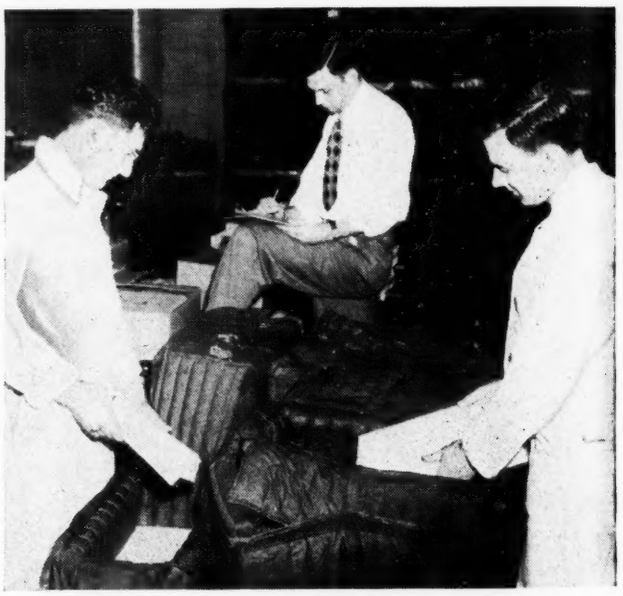
All But Weighing and Packing Operations Have Been Mechanized

9. CATCH-WEIGHT and check-weight methods of weighing and packaging fillets into cartons were devised.



10. WRAPPING machines overwrap cartons with cellophane, heat-seal the wrapper, and apply net weight labels.

11. PACKAGES are packed into master cartons to reduce number of handlings and avoid damage to wrapper.



12. LESS-THAN-CARLOAD shipments are packed with sufficient dry ice in insulated Shamrock shipping containers.

then keeping them there without danger of defrosting was the final problem. The latter project—self-servicing the packages in the stores—was one of the knottiest of all.

After contacting manufacturers of mechanically refrigerated cases and store-testing them, A & P introduced one of the first self-service display cases for frozen foods. Open-top cases now keep the Cap'n John's consumer pack at a uniformily low temperature and permit self-servicing.

Fish Buying

Fish are purchased at the Boston Fish Pier, where the inspectors constantly examine the iced fish as they are unloaded from the holds of the boats. After the fish are weighed, they are again iced and loaded into canvas-covered carts, each holding 1,500 lb. Tractors hook onto these carts and haul them to the A & P plant, less than half a mile away.

Here the fish are again inspected, and if considered top quality, they are tagged for the filleting department on the third floor.

The tagged fish are unloaded into a stainless steel whole-fish hopper. From the hopper, the fish travel on a conveyor to a Godfrey scaling machine. Before reaching the scaler, the fish are washed by a series of top and bottom water sprays located on the conveyors. Scalers are shown in Photo 6.

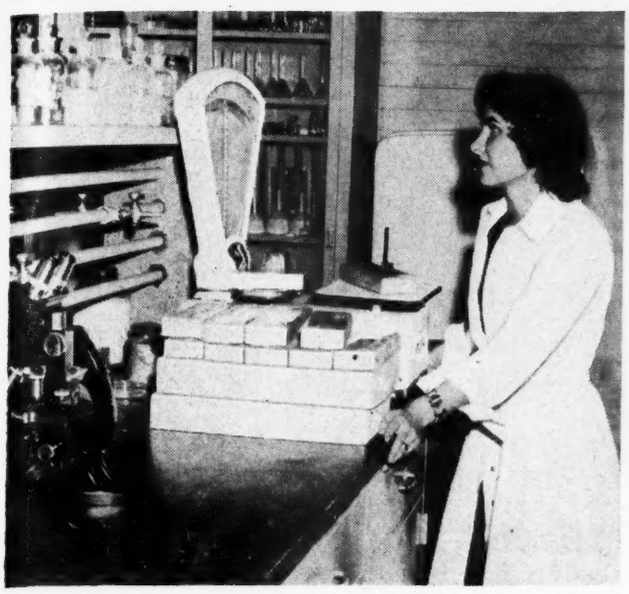
Leaving the scaler, the fish drop on a 20-ft. rubber-covered conveyor belt, where loose scales are washed from the fish by a series of water sprays. Next, the scaled fish move on to an 18-man filleting table—nine cutters on each side. Each cutter has a removable cyprus cutting board, where whole fish are cut into two fillets.

Brining the Fillets

The filleting table has three conveyor lines. The top line is for fillets; the intermediate one for the incoming scaled fish; and the bottom one for fish waste. The filleting operation is followed by brining.

Four objectives are accomplished by brining: (1) It facilitates the handling of fillets by increasing the firmness of

Lab Keeps Tab, Then Fish Go to Stores Handling the Line



13. **LABORATORY periodically checks package weight. Also cooks fish so taste panel can judge them for quality.**

14. **CONSUMER-ATTRACTING self-service display case keeps the frozen fish packs at uniformly low temperatures.**

the flesh, (2) imparts a slight salt flavor to the fish, (3) washes loose flesh and blood from the fillets, and (4) reduces the amount of "free drip" while thawing the frozen fillets.

The fillets are drained as they leave the brine tank on an inclined stainless steel conveyor. Next, the fillets move to a 42-ft. weighing and packing line, where 24 girls inspect, weigh and pack them into cellophane-lined cartons. Peters machines form the cartons, which are then coded. Each machine sets up 35 cartons a minute.

The weighing and packing line, like the cutting line, also has three conveyors. The bottom one, a two-way belt conveyor, brings the fillets from the brine tank to the packers. The top one carries the cartons set-up by two Peters carton forming machines. And the middle one takes the weighed cartons of fillets to the automatic wrapping machines.

Weighing Technics

The method of weighing employed depends upon the variety of fish being packed. As mentioned, two methods are used—the check- and the catch-weight systems. Catch-weighing, in the case of the larger fillets, speeds the weighing and packing operation because the fillets can easily be packed to the 16-18 oz. net weight range.

The two-way fillet belt has two conveyor belts that travel in opposite directions. At the end of each line there is a diagonal bar which directs the fillets to the opposite line from which they are traveling. In this way, the fillets are prevented from piling up at the end of the line, thereby avoiding damage to the flesh.

Those fillets that are weighed to an exact weight travel to the check-weight station. Here, an operator checks the weight of each carton. Any cartons that are over- or under-weight are returned to the packers, who must reweigh them before they travel to the two carton wrapping machines on the second floor.

Catch-weight cartons by-pass the check-weight station and go to the carton wrappers. Oliver and Battle Creek machines overwrap the cartons with a sheet of moistureproof cellophane, heat-seal the wrapper, and apply thermoplastic labels to the wrappers for marking the net weight of the fillets.

Packages that are check-weighed by-pass the catch-weight station beyond the wrapping machines, and go to the carton packers. On the other hand, those cartons that are catch-weighed move along to the catch-weight station after they are overwrapped. Here, the packages are weighed to 16, 16½, 17, 17½, and 18-oz. units, and the weights are marked on labels. The cartons then go to the traying table, where both the check- or catch-weight cartons are double-layer-packed into master cartons—ten packages to a master carton. Packages are placed window-side face down, so that this side will not expand during freezing and take on an unattractive bulged appearance.

There are three reasons for packing the consumer package into master cartons: First, there are fewer units to handle. Second, damage to the cellophane overwrap is avoided. And third, more fillets can be frozen in each Birdseye freezer.

Four master cartons are placed on each freezer tray, then the trays are loaded on a carrier, which is pushed to a 10-station Birdseye multi-plate freezer. After the fillets are frozen, they are packed for shipment to either stores or warehouses.

Shipping Containers

Those packages that are shipped to warehouses are packed in corrugated shipping containers—5 of the 10-lb. master cartons to a container. The containers are next glued and sealed on a Pak-O-Matic case sealer. After the containers are sealed, they are loaded on pallets—36 containers to a pallet. Pallet loads are finally transported by electric fork-lift truck to storage rooms to await shipment, or they are loaded directly on refrigerated cars or trucks and hauled to warehouses.

Master cartons containing the frozen fillets are not packed into shipping containers. Instead, they are loaded onto pallets and moved by fork truck to the store shipping department, located on the first floor. Here, the cartons are packed with dry ice in 40, 90, and 170-lb. insulated Shamrock shipping containers for less-than-carload shipments. The amount of dry ice used in each shipping container depends upon the outside temperature and the distance the insulated container is to be shipped.

Packages of Cap'n John's fillets are held in 0-deg.-F. storage and are laboratory-and-production controlled. Limitations on the storage holding times are inventory controlled, with fixed holding times set up for each variety of fish.

Two-Way Radios Link Fields

Mounted in fleet of pick-up trucks, radiophones have brought improved waste in labor and reducing spoilage; and new speed in coping with

TWENTY-FIVE two-way radiophones mounted on trucks and staff cars provide immediate field-to-plant communication for division managers and key personnel of the 19,000-acre Seabrook Farms at Bridgeton, N. J. And by "tying tighter" the extensive field-and-process operations, these radios have been instrumental in the improvement of fruit and vegetable quality.

In addition, there have been several other notable advantages. The lag has been taken out of labor and process scheduling. Strain has been eased on supervisors, who are now able to handle more work better. And the system has proved of prime value in speeding actions in emergencies.

The radios are installed in the fleet of pick-up trucks and cars used by the key foremen, division managers, maintenance engineers and the supervisory staff. Successful operation of the system dates back to June 1946.

Communications with the 25 mobile units are worked through the Farms' main office headquarters station. In addition there are five other dispatching points from which the main transmitter can be worked. In effect, every official in the field is as close to the head office as the dashboard of his pick-up truck. Thus, the head office gets accurate field information right to the minute.

The improvement in labor scheduling is one of the most notable results. No longer is it necessary to pay standby crews. Interruption in the harvesting schedule by a sudden rainfall, or other unforeseeable event, is now known at the factory instantly. Accordingly, the schedules can be changed immediately to anticipate the variation in the flow of raw material. In the days before the radio system, there were always time lags before such flow-variations became apparent.

Big Aid in Supervision

Particularly striking is the new effectiveness of the farm operations supervisory staff since the radios were installed. The quick radio liaison has extended the area that one man can adequately supervise. The reduction in mental strain on the supervisory personnel is also extremely important. Each staff member can now concentrate on a specific job in the field with the assurance that the radio will notify him immediately of any situation requiring his presence elsewhere.

Formerly, the supervisors spent an inordinate amount of their time in rushing from one location to another in order to make certain that all of the scattered farm operations were going well. They were never able to spend adequate time at any one location.

In addition, much more effective work is being achieved by specialized personnel, such as maintenance engineers, who can now be called to a breakdown at a moment's notice. When repair parts are required to get any of the farming implements back into operation, such parts can be rushed to the site after a radio call for help. Likewise, farm laborers can quickly be ordered from one location to another when an emergency arises.

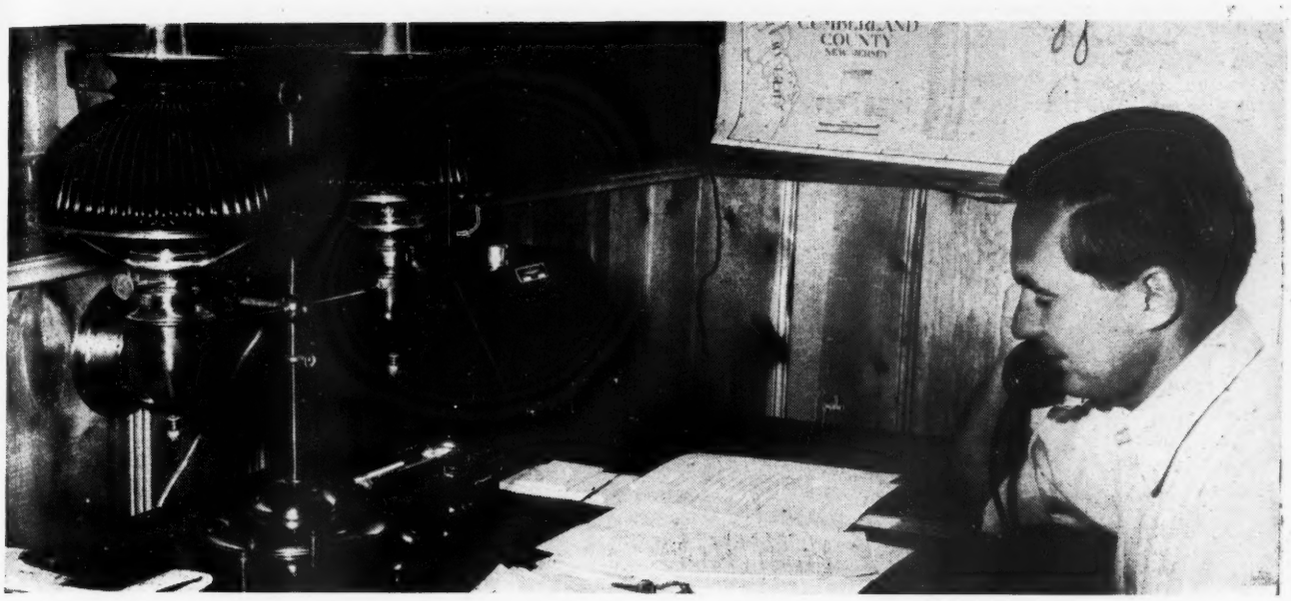
There are numerous uses of the communications system in meeting special problems. Suppose a crop's maturity was in question just as the harvesting got underway, and that laboratory tests then indicated that the crop needed more time to ripen to bring it to peak quality. Word would be flashed to the division manager in charge, and the harvesting operation would be stopped immediately.

About the Equipment

To operate the two-way radios the Farms employs its own 15w. FM ultra short-wave system, with the central station powered by the company's own a.c. supply plant. The FM aerial is run almost to the top of the 225-ft. smoke stack of the steam plant. From this lofty point, radio signals can reach every corner of the extensive farming operations.

The central station comprises a Model No. 1907 unit made by the Link Radio Corp. of New York City. Cost of such a headquarters station varies greatly with the type of installation, but $2,000 would be an average figure.

Seabrook Farms Photos by Taubert



With Office in Processing Plant

supervision and coordination; more efficient scheduling, minimizing emergencies — all contributing to higher quality Sealbrook products

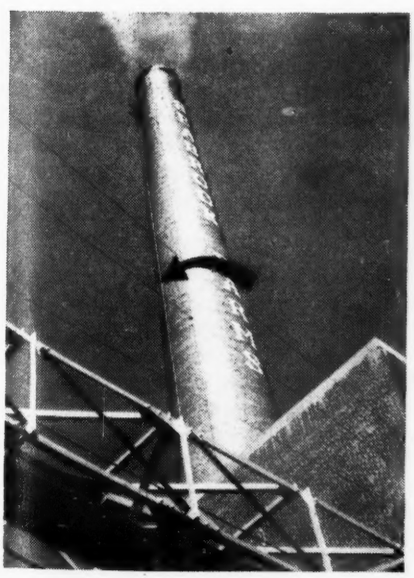
The transmitter-receiver mounted on each mobile unit is a Link Model 1906, costing approximately $500 for each installation. These mobile units will operate from either a 6 or 12v. automotive electrical system, with no changes necessary in batteries or generators as long as only the usual amount of driving is done.

Fact is, the two-way radio system has proved so satisfactory that Seabrook now plans to extend it to the 750 outside farmers with whom the company contracts for various crops.

Huge size of the company's operation gives some idea of the need for the "on the dot" intercommunication. It is revealed that last year Seabrook harvested and processed more than 165,000,000 lb. of peas, beans, beets, asparagus, rutabagas and apples. All planting, cultivating and harvesting is highly mechanized. A fleet of more than 100 load-carrying motor trucks, most of GMC make, hauled upward of 120,000,000 lb. of fertilizer, spray materials and seeds and vines last year.

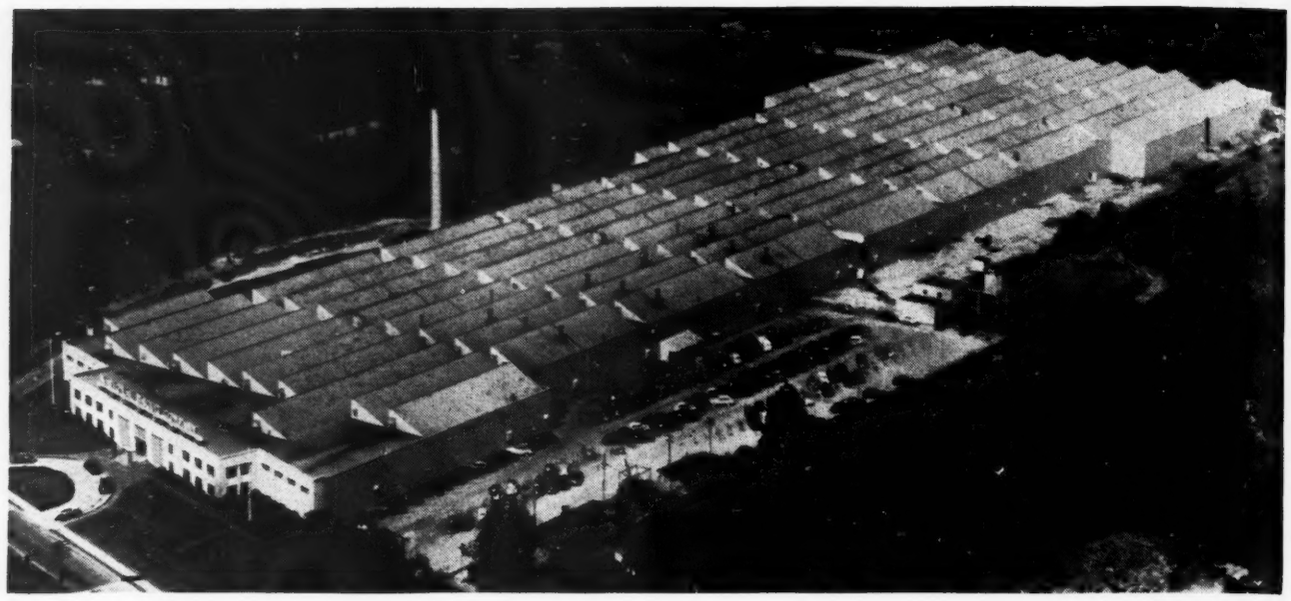
The operations require all kinds of tractors, as well as many special farming implements, such as mechanical viners developed for peas and lima beans. Also, planes dust and spray.

At the height of the season, work is often carried on around the clock, with men and equipment busy in floodlighted fields. At this time, the headquarters radio station is kept open on a 24-hr. watch to coordinate all the farming and processing operations.



RIGGED up side of 225-ft. stack, lofty FM aerial can signal any growing field.

TRAVELING transmitter-receiver units are mounted in weather-proof cabinets, which are bolted to bodies of pick-up trucks. Company electricians keep a close check on the sets.



UNIFORMITY of design offers maximum flexibility for future expansion as well as for shifting of existing in-plant equipment. Intended for daytime operation, the plant's sawtooth construction incorporating the use of sky-lights provides sufficient natural light.

Biscuit Quality Determines Equipment and Building Design

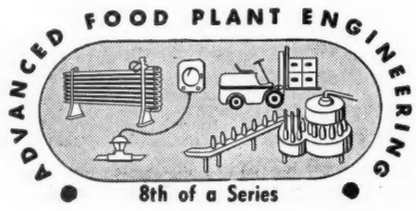
Increased efficiency, improved quality of baked goods, better sanitation and cleanliness are brought about by a radical change in biscuit bakery design

By F. W. McCARTHY
Assistant Editor
"Food Industries"

STRAIGHT line production is the basis of design for the Atlanta bakery of the National Biscuit Co. Behind this design are the company's constant efforts and research to bake a better biscuit.

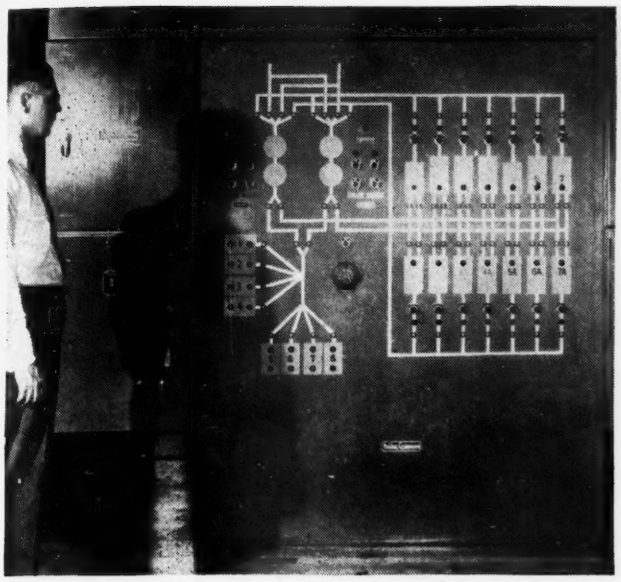
Quality conscious, its first objective is to improve the product. Advanced engineering is then applied to develop equipment which will provide a continuous automatic process to produce the improved biscuit at a minimum operating cost. National's studies confirmed the fact that a much better quality could be consistently obtained on band ovens than on the old reel or plate ovens then in operation. Continuous band ovens and cooling conveyors were developed by the engineering department and installed in uninterrupted straight lines. This installation has improved quality, increased efficiency and production.

Housing of this equipment on a straight line production basis brought about a radical change in building design for a biscuit bakery from that normally built in the past. Designed for daylight operation, the bakery consists of one story with mezzanine sections. It is of sawtooth and sky-light type. Use of a uniform construction throughout the bakery provides maximum flexibility for future expansion. Another feature is that, if necessary, auxiliary operations can be transferred to any other part of the building as desired. The present bakery is 1200 ft. long, 315 ft. wide and provides a floor space of 425,000 sq. ft. Heat and ventilation are provided by an internal system of forced draft and mechanical exhaust as all windows and sky-lights are sealed tight. All air coming into the plant is well filtered. This closed system of ventilation reduces to a minimum any contamination of the product from the atmosphere. Many other building features were designed wherein the emphasis was upon sanitation and cleanliness. Partitions, walls and columns are constructed, or faced with, non-absorbent washable tile, and there are practically no painted walls. All floors are of polished select maple. Location of the bakery is in line with present thinking, being within the city limits but in an area which is not overcrowded or built-up. This provides ample room for parking facilities for employees and clean and sanitary surroundings for the production of food items.



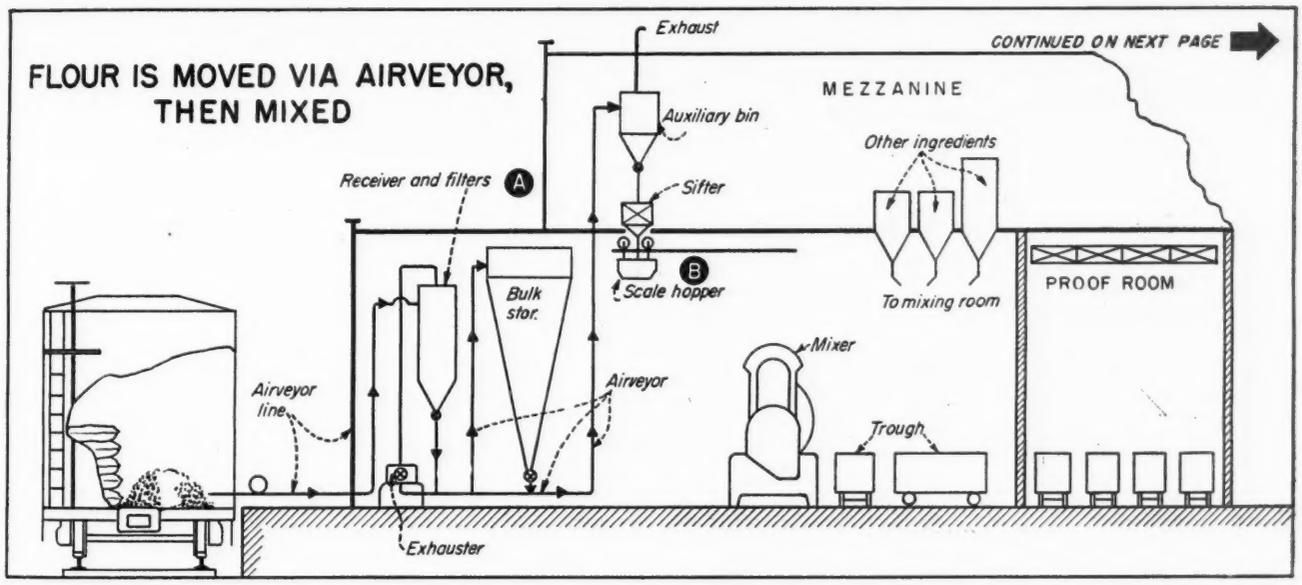
Sanitation Gets Accent

Sanitation during operations and plant maintenance are of prime importance. Uniforms are furnished and laundered for the employees by the company. Modern employee facilities consisting of tile wash rooms, showers, lockers, dressing rooms, cafeteria, medical department and first-aid room are furnished by the company. Employees receive a physical examination before hiring and periodical examinations while in the company's service. Sanitation in the plant is under the supervision of a designated foreman.



A. MOVEMENT of flour to and from storage bins is via an Airveyor. All flow is controlled from a panel board.

B. MIXED dough is transferred from the mixer to a trough for delivery to the proof room for fermentation.



This foreman executes the policies formulated by a chief sanitary engineer in the New York central office. Periodical inspections are made by field sanitary engineers from the main office to the various company plants.

Continuous straight ovens in excess of 300 ft. in length and having seven controlled temperature zones are now in operation in the plant. The ovens are gas-fired and use a 31½ in. Sandvik steel belt. Appearance, sanitation, cleanliness and maintenance were considered in oven design. Metal enamel surface casings and joints covered with stainless steel strips give the ovens a streamline appearance. They evidence the engineering study given them.

Compressed air is used in cleaning the bakery equipment. The dust blown from the units of equipment is picked up by efficient portable vacuum cleaning units.

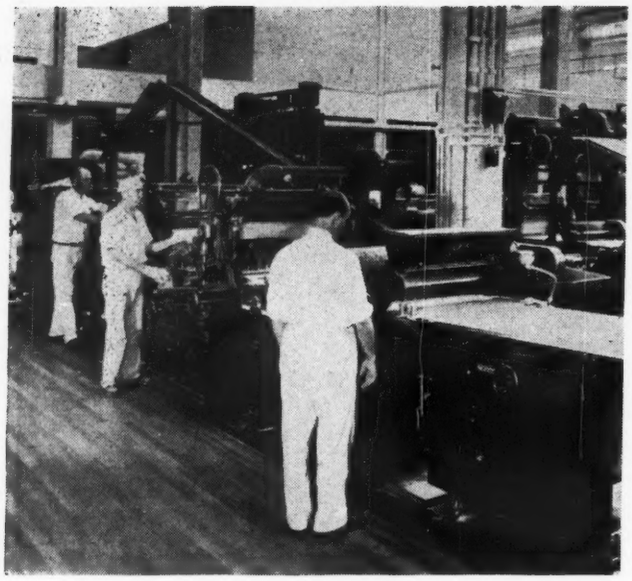
Continuous cooling conveyors varying in length from 200 to 240 ft. follow the ovens. These conveyors are installed on the same uninterrupted straight line with the ovens. The length of each unit from cutting machine through the packaging department is over 800 ft.

The plant was designed to double the production of the old bakery in order to satisfy the demand in the Southeastern states for the company's products. Built to operate on one shift, it is now necessary to run two shifts to meet the demand for biscuits and crackers. Present output is over four times that of the old bakery.

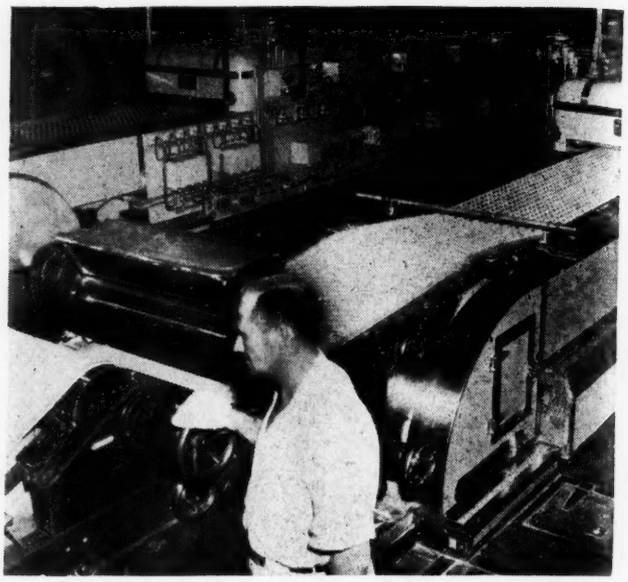
The old plant had three reel and three travelling ovens. In the new plant are six band ovens and two plate ovens with twice the baking surface of the old type bakery. The smaller number of baking operators needed to run band ovens is an economic advantage. In place of the 8 to 11 operators required on a plate oven and the 9 operators needed to run a reel oven, only 4 to 5 workers are necessary for the band oven.

While this progress was being made in reducing baking costs, attention also was paid to other problems. Particular attention was given to the method of handling flour, resulting in a change to bulk handling.

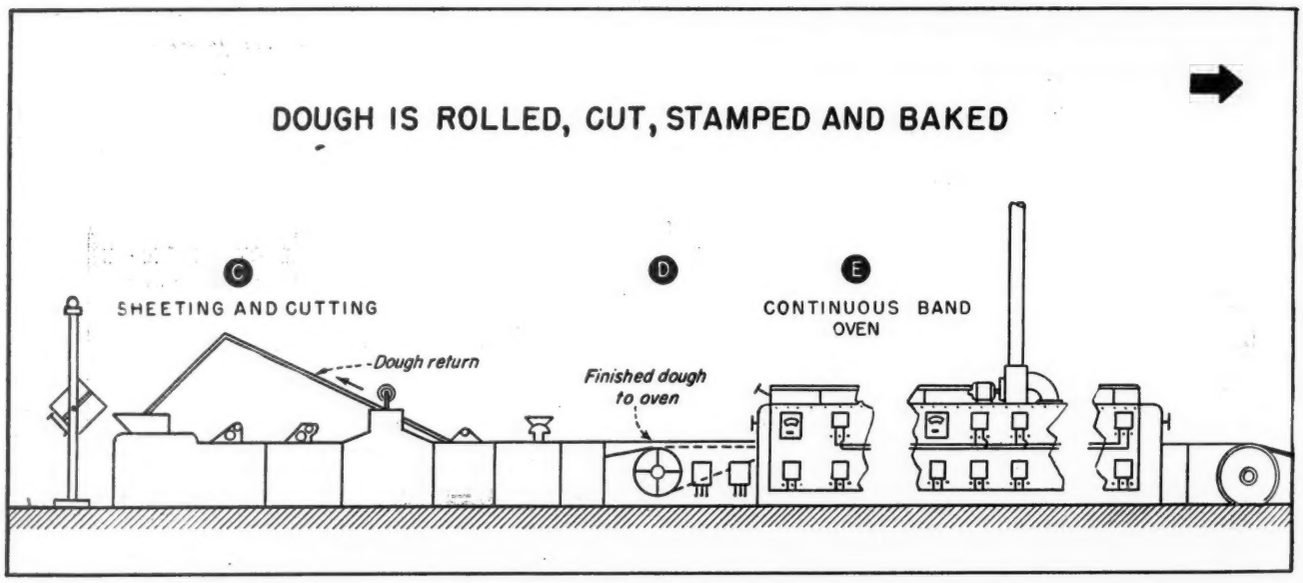
Production has exceeded 6,000,000 lb. of flour per month. To handle this volume of flour most efficiently the company has installed Fuller Airveyor equipment. Storage bins, measuring 20 x 22 x 30 ft. and having a capacity of 300,000 lb. each are included in this installation. Total storage is 1,800,000 lb. in six bins. The Airveyor is used to convey the flour from the dumping stations, either in the car itself, on the loading platform or within the building proper to the storage bin. It is also used to convey the flour from the

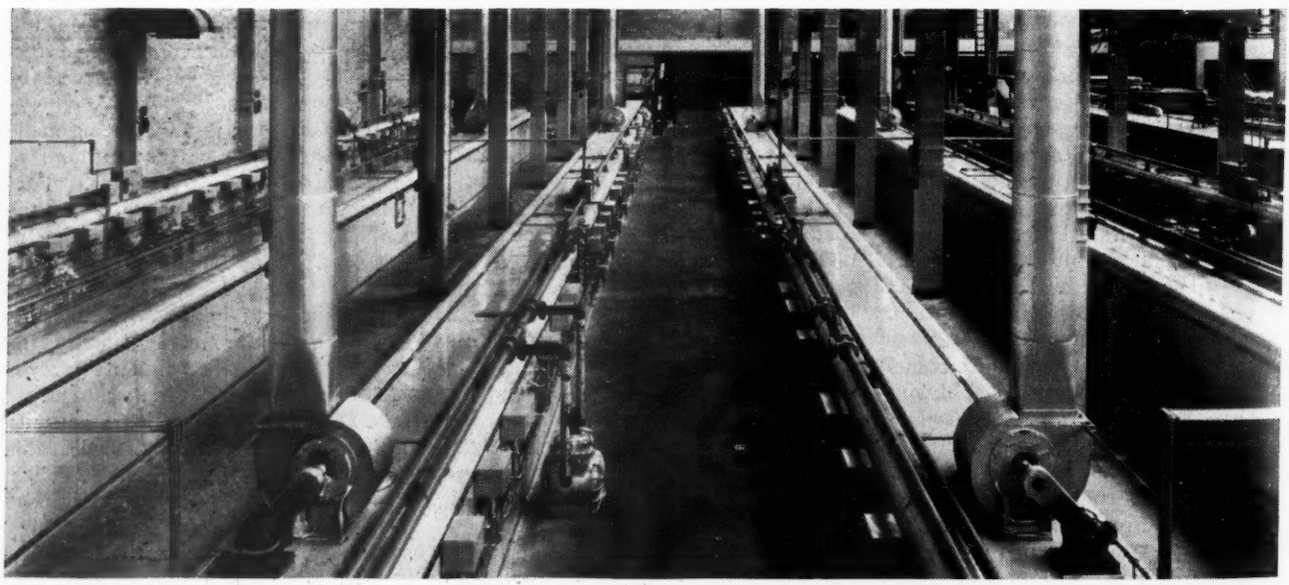


C. DOUGH in troughs is wheeled from the proof room to the baking line and fed into the sheeting machines.



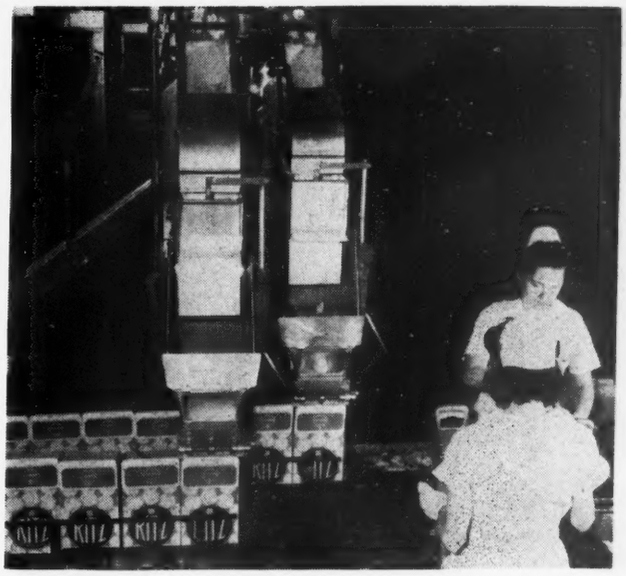
D. ROLLED to proper thinness, dough is cut and stamped to shape. Crackers in dough form are fed to the band ovens.





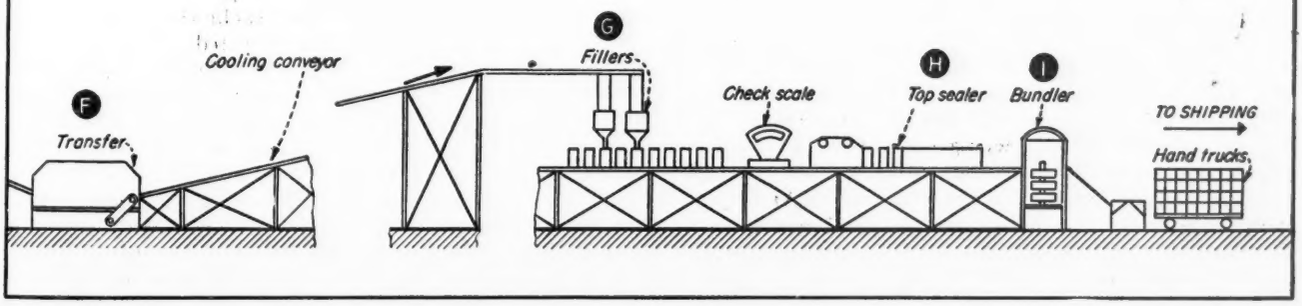
E. OVERALL view of ovens shows the streamline design. Oven appearance and cleanliness are aided by enameled casings, stainless steel strips over the joints and symmetry of layout of piping and controls.

F. BAKED biscuits from ovens are sprayed as desired and transferred in this unit to continuous cooling conveyors.

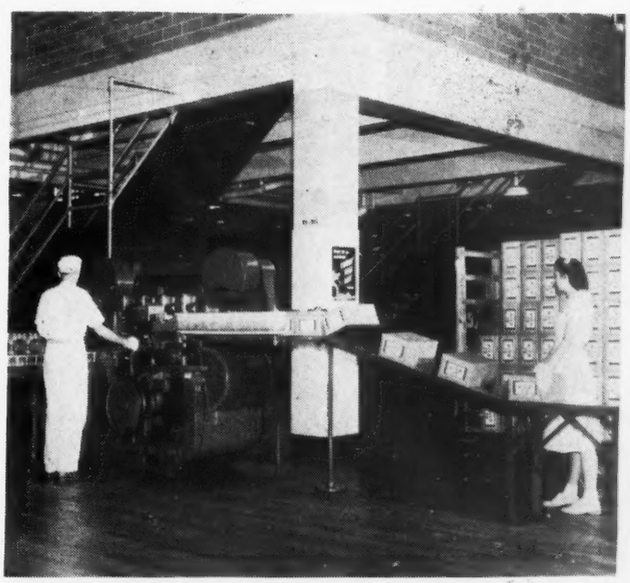


G. FILLERS are fed by continuous belts from the cooling conveyors. Automatic scales determine the net weight.

CRACKERS ARE COOLED, FILLED IN CARTONS, THEN BUNDLED FOR SHIPMENT

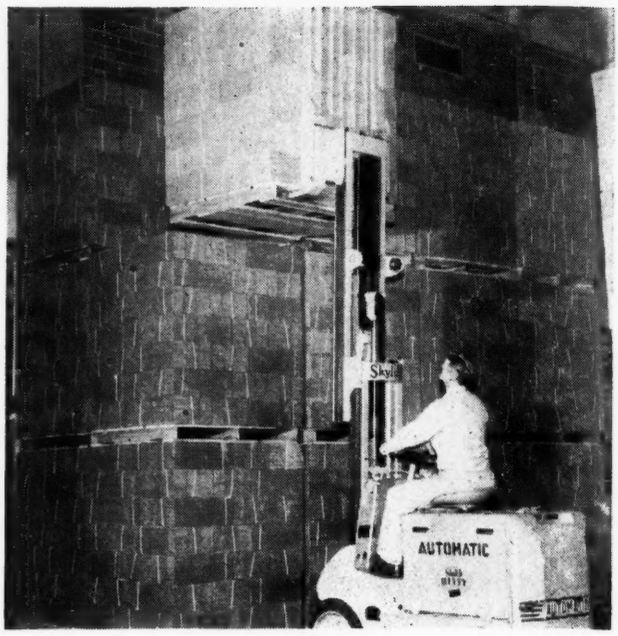


H. FILLED cartons of crackers are next top sealed and then continue on the belt to the bundling machines.



I. BUNDLER automatically wraps cracker cartons. Operator stacks packages on truck for delivery to shipping room.

SHIPPING is facilitated by use of hand trucks. Stacks of the product are limited in height to prevent any crushing.



INDUSTRIAL lift truck with telescopic boom is employed with pallets for the handling of packaging materials.

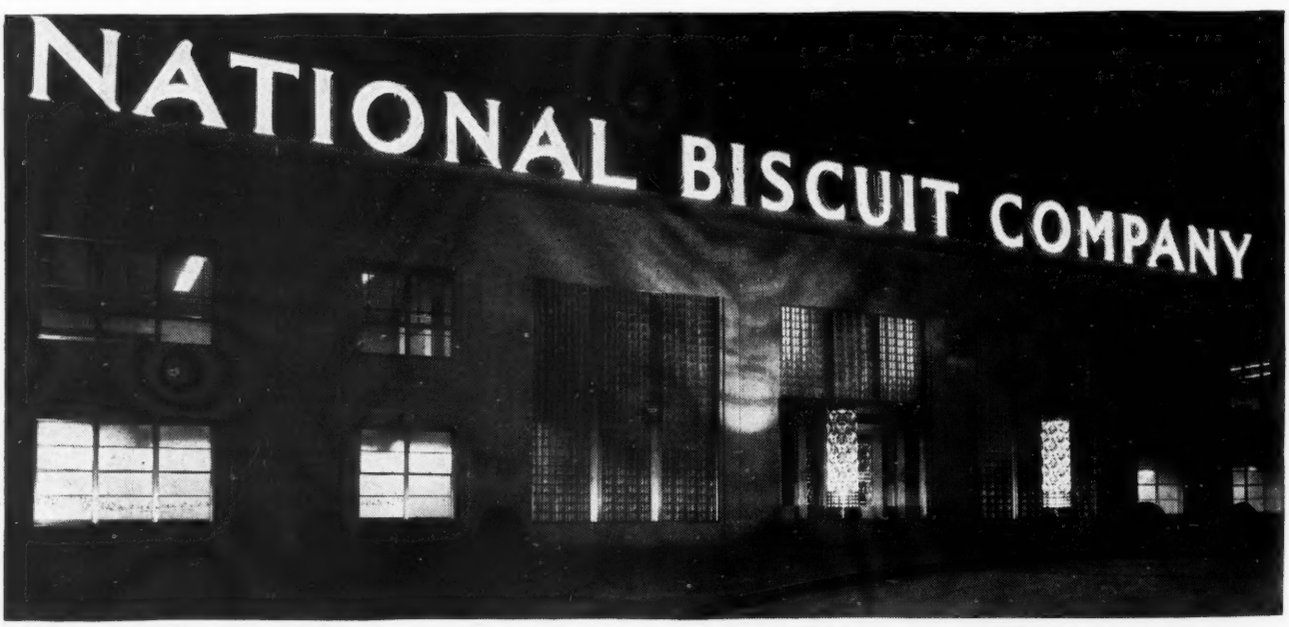
storage bin to the auxiliary bins leading to the hoppers feeding the mixers.

The Airveyor comprises a positive-pressure exhauster, a material collector or receiver and the necessary conveying duct, terminating in a flexible section for easy manipulation at the dumping station. A partial vacuum in the collector and pipe line is created by the exhauster to produce the necessary air velocity to draw a mixture of air and flour into the nozzle and system. The flour thus collected in the receiver is discharged through an air lock feeder into the line feeding the bulk and/or auxiliary bins. The discharge of the exhauster is utilized to blow this flour.

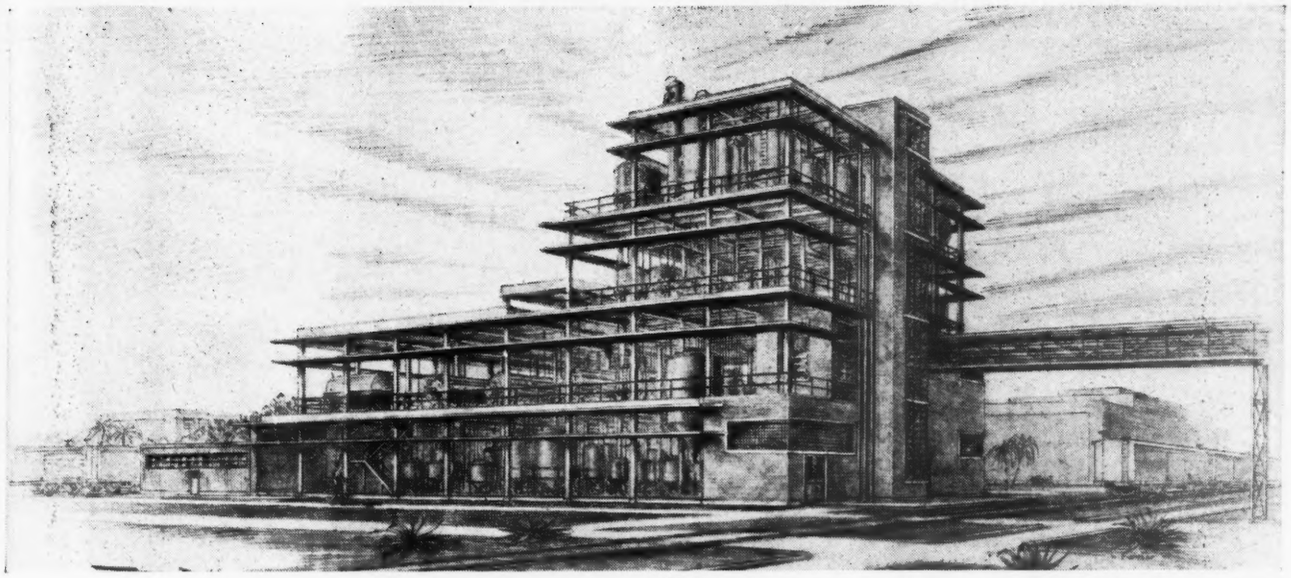
Operation of equipment is controlled from a single board. Panel lights indicate the flow of materials to the respective bins. Indicating lights on the board show when a particular bin is filled and when the low point is reached when drawing flour from the bin.

Flour at present is received at the plant in paper bags. These are opened and the Airveyor takes over. Plans are under way for the handling of flour in bulk cars especially designed for this purpose. It is hoped these bulk cars can be developed and built to be put into service in the immediate future. Bins can also be added for the handling of sugar and graham flour by the use of the Airveyor system.

Flour from the auxiliary bin storage passes through a sifter to a portable overhead scale hopper and is fed to the mixers below. Dough from the mixers is dropped into troughs and wheeled into the proof room. Conditioned air at a temperature of 70 to 80 deg. F. and relative humidity of 80 percent is maintained in the proof room. Following proofing the troughs of dough are wheeled to the baking floor and the dough is transferred to the sheeting machines. Rolled and stamped dough is fed continuously to the band ovens. Excess dough from stamping is returned for reuse to the head of the line via a belt conveyor. Crackers coming from the ovens continue on the straight line cooling conveyors to the packaging department. Ritz crackers are automatically packaged, bundled and delivered to the shipping department on wheel trucks.



ARCHITECTURAL treatment of the facade, using glass blocks and aluminum mullions, is accentuated by novel lighting standards.



TYPICAL of architectural scheme followed in new Corpus Christi, Tex., Corn Products plant is this sugar liquor and sirup house.

Open-Type Building Construction Feature of New Food Plant

Improved appearance, efficiency and safety are achieved by special architectural treatment

EXPECTED to be completed in early 1949, the new Corn Products Refining Co., plant at Corpus Christi, Tex., is believed to be one of the first multi-story plants of open-type construction in the food processing field. When all of the units are erected and equipped, the new mill will resemble a petroleum refinery—for exposed structural frame features the design rather than the closed-in pattern which has been conventional in food plants.

Functionally, the novel plant will have many advantages: The explosion hazard is greatly reduced, dust control problems are minimized, economies in construction are enjoyed, and flexibility is provided in event equipment has to be moved. Most of such moving will be possible without tearing out walls.

From the standpoint of appearance, the new facility will be a most attractive one in a branch of industry where attractiveness has hitherto received but little consideration. The new overall handling of the structure-equipment problem will undoubtedly influence designers of future large scale food processing plants, especially plants for basic raw materials. The open-type construction is especially advantageous for southern areas, but it is not limited in application to the warmer climates.

The new plant will manufacture dextrose sugars, starches, high protein cattle feed and other products from milo to maize. It will utilize a new process developed especially for grain sorghum and never before used on a commercial scale. It is a large plant, covering hundreds of acres and costing in excess of $10,000,000.

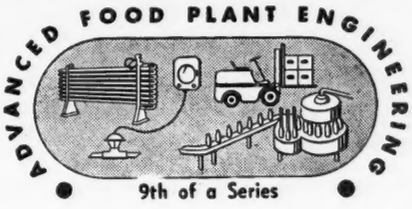
The unique approach to the design problem for this mammoth new plant was formulated soon after Corn Products Refining Co. retained the H. K. Ferguson Co., industrial engineers and builders, for engineering and construction services.

A high degree of cooperation between the owners and the designers was established, and both parties agreed at the outset to design a plant that would be not only 100 percent functional but also architecturally appealing. Representatives of both Corn Products and Ferguson were convinced that a food processing plant with "eye-appeal" could be constructed without sacrificing process efficiency and without boosting the cost of construction.

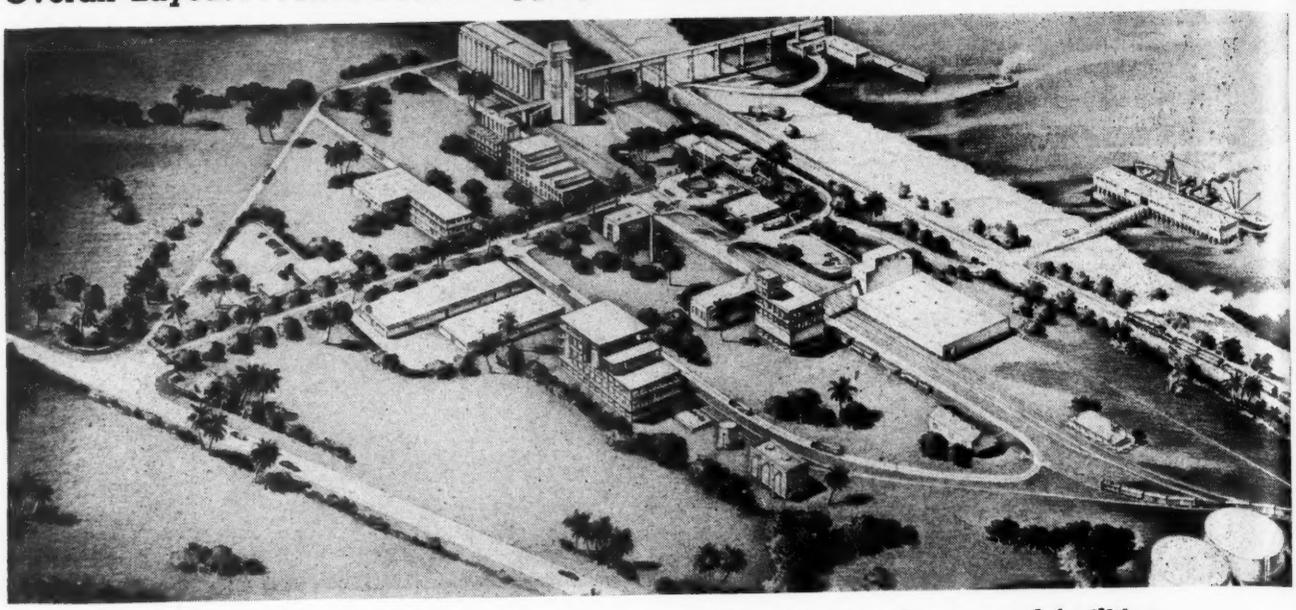
In fact, with regard to cost, the opposite is true, a situation made possible by the ideal location of the plant site in the Corpus Christi area. This location resulted in the first major decision that affected the entire architectural approach. It was decided to use "open" type construction in every instance where it was not imperative for the process area to be enclosed.

In addition to being more economical, the open construction approach has other advantages: It derives maximum benefit from the climate; it reduces fire hazards and fume conditions; and finally, it makes expansion and modernization easier and more economical because it eliminates the necessity of revamping entire buildings if equipment changes are in order.

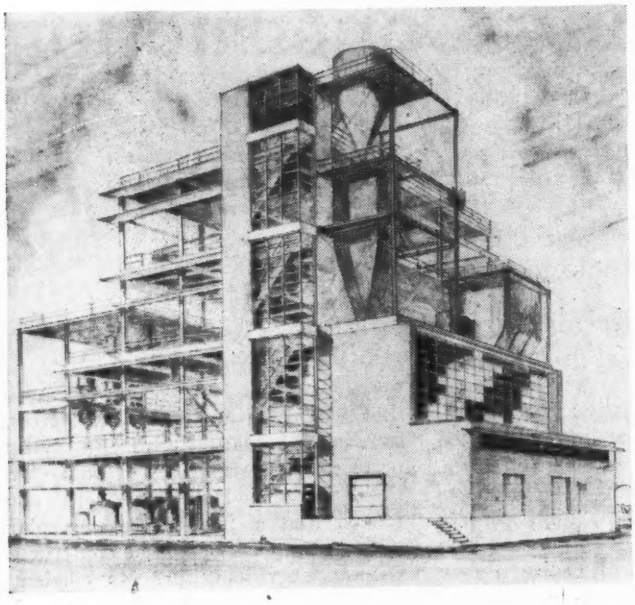
Here is how the departure from past plant design has affected one part of



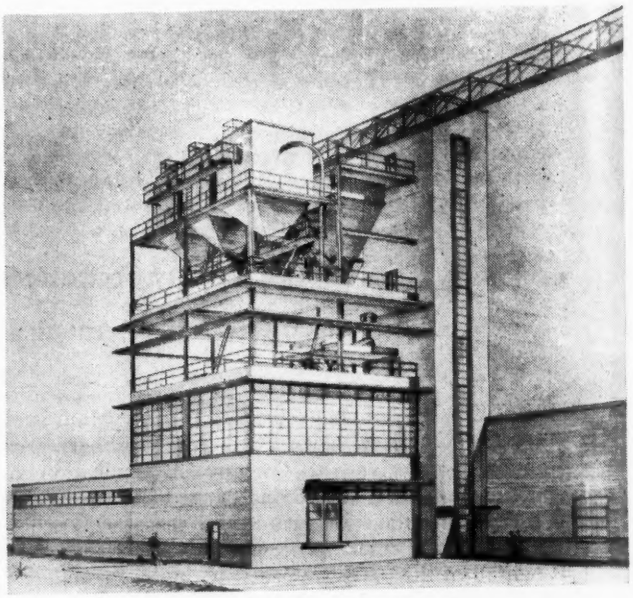
Overall Layout . . . And Feed, Bagging and Starch Houses



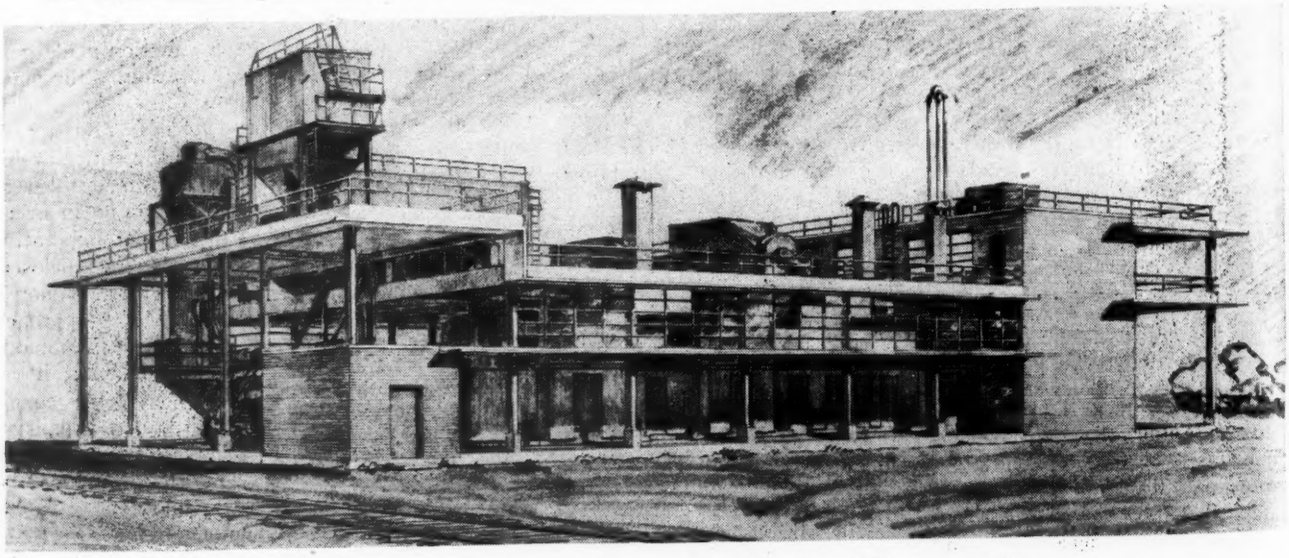
GENERAL plant scheme shows location and size of various houses and facilities.



IN feed house, open structure is accented.

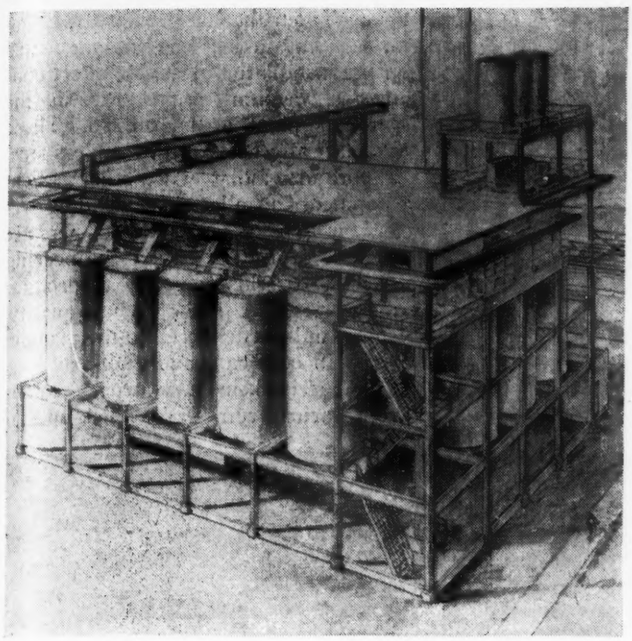


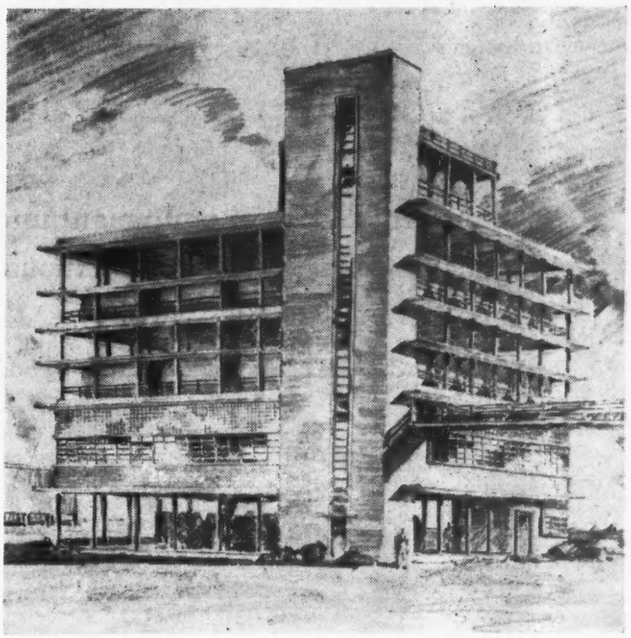
IN bagging house, upper floors are open.



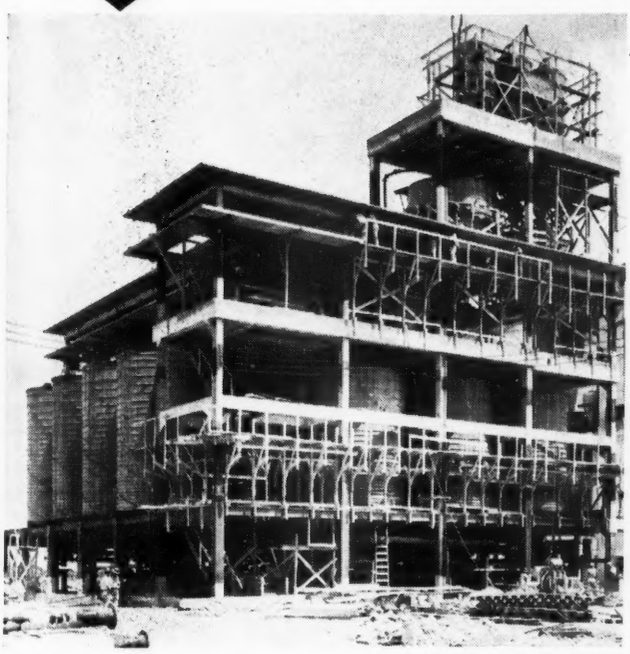
STARCH house is open where processing conditions permit.

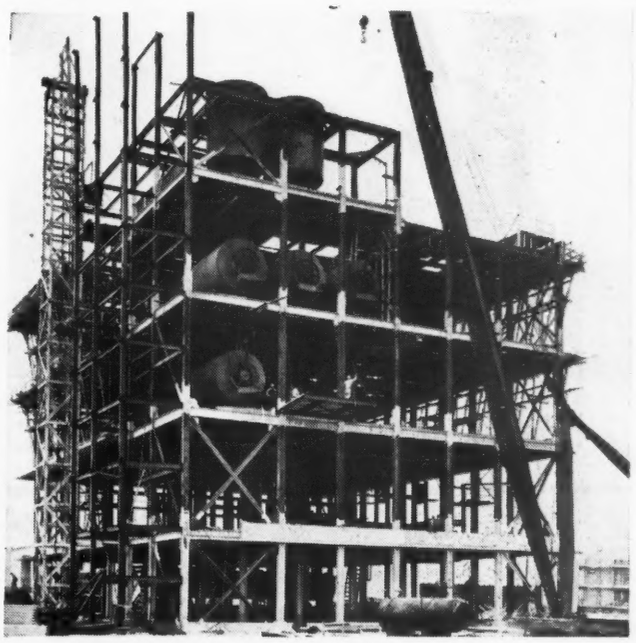
Steep House **Sugar House**





The Architect's Drawings and ...





... the Actual Construction

the Corn Products plant, the grain storage group: In existing plants, the entire head house, the tall part of the unit, is completely enclosed. In this new installation, approximately two-thirds of the construction above the top of the silo line has been eliminated. In fact, the only enclosed walls in this unit are bin storage walls. Due to the open areas on the grain elevator buildings, dust (which has always been a major fire hazard) has been greatly reduced.

Another example that may be cited is the steep house. The most recently completed steep houses in the industry are completely enclosed buildings. Since unpleasant and sometimes destructive gases are liberated in this phase of the operation, maintenance costs on these enclosed buildings have been unusually high. By opening up the buildings the maintenance problem is reduced greatly and personnel are given much better working conditions—all at an actual savings in construction cost.

Similarly, mill houses, feed houses, refineries and starch houses in corn processing plants have generally been enclosed structures. In each instance in this plant, Ferguson and Corn Products engineers have made concerted efforts to close up the products for processing, and open up the buildings. This will lead to a cleaner operation.

In the design of the sugar house, the only enclosed portion is the centrifugal spinning room on the second

(*Continued on page* 214)

Project Architect

Building plans for the Corn Products Refining Co.'s new plant at Corpus Christi, Tex., were developed by Frank L. Whitney, architect assigned to the project by the H. K. Ferguson Co., Inc., engineers and builders of Houston, Cleveland and New York. Corn Products engineers collaborated.

ADVANCED ENGINEERING

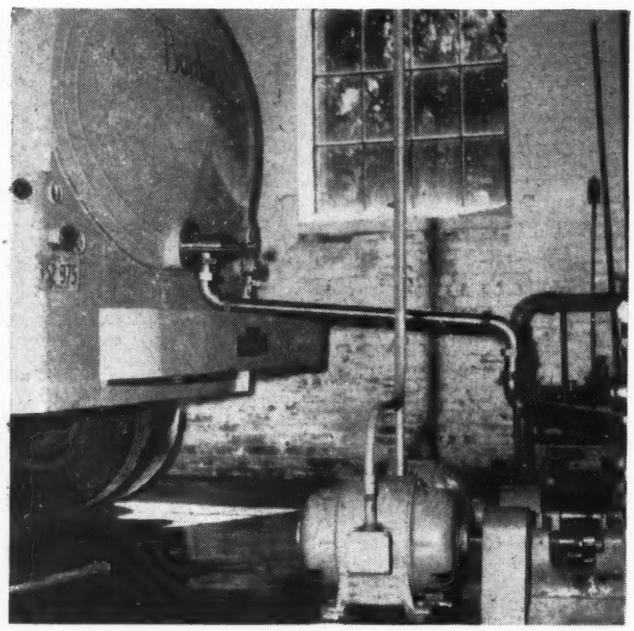
In Processing Evaporated Milk

Component pieces of equipment under automatic control establish a continuous process

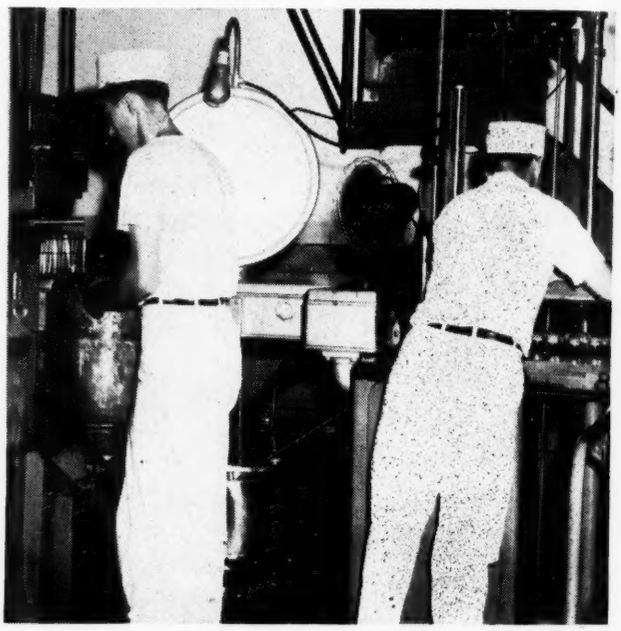
By F. W. McCARTHY, Assistant Editor, "Food Industries"

PRODUCTION of evaporated milk per hour has been increased and an economy in fuel and water effected by the installation of double effect continuous vacuum evaporators in the Borden's plant at Dixon, Ill. These automatically controlled, stainless steel evaporators along with other recent equipment installations including regenerative plate heaters and coolers are all part of the advanced engineering practiced by this company to produce evaporated milk of the highest quality.

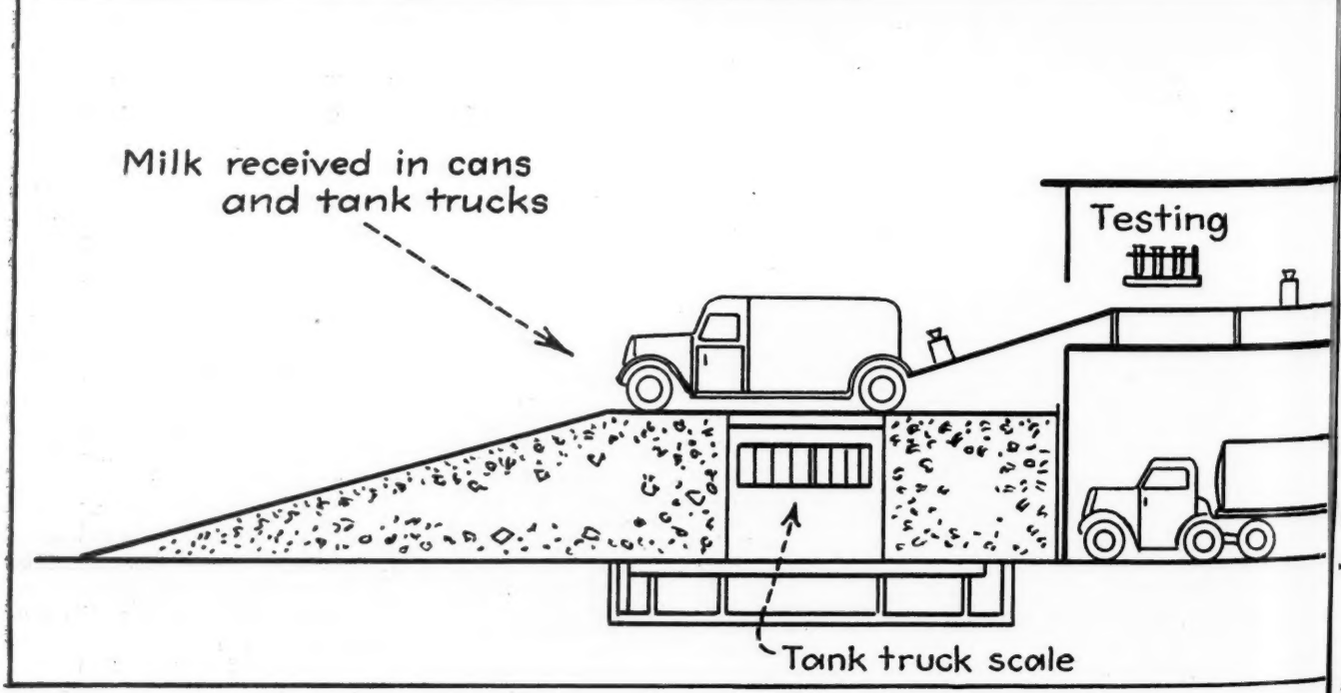
Raw milk is delivered to the plant in trucks in both cans and tank-load lots. Milk received in tank trucks comes from various refrigerated pick-up sta-

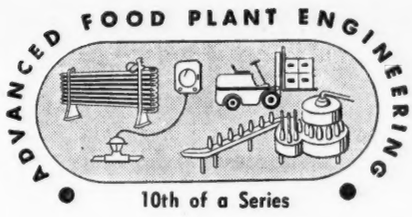


1. INSULATED company tank trucks are unloaded in the plant via stainless steel pipe and fittings and sanitary pumps.



2. INCOMING cans of milk from local producers are dumped into a tank scale. Samples of milk are taken at this point.

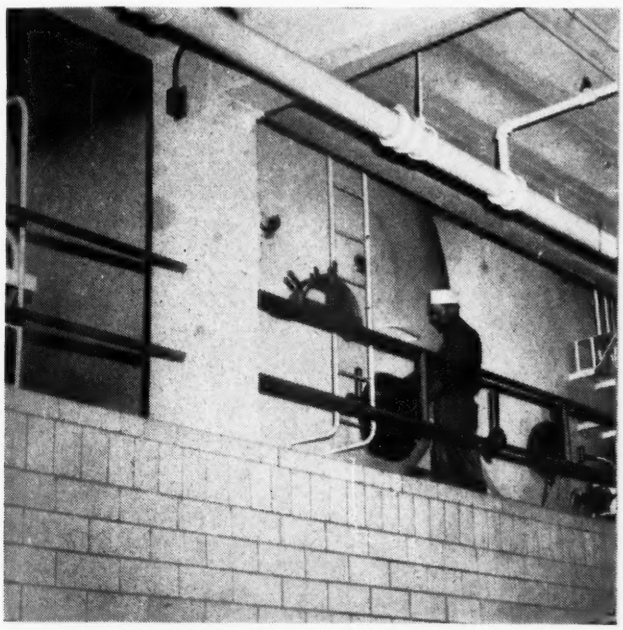




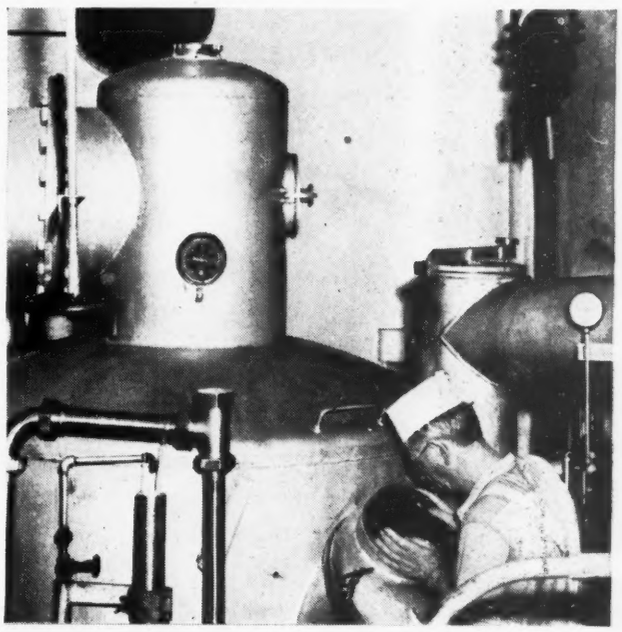
tions maintained by the company. Insulated tank trucks of 3000 gal. capacity are weighed on a platform scale adjoining the building. The unloading station for this milk is maintained within the building proper. Stainless steel pipe and fittings and sanitary pumps are used to unload the tank trucks. Equipment used in tank unloading has been installed in the proper manner to simplify both the actual unloading operation and the necessary sanitation operations which precede and follow its use. Milk from the tank trucks, having been previously chilled, is pumped direct to the holding tanks. There are five sanitary holding tanks in the plant with a capacity of 30,000 gal. of milk. They are located on a mezzanine floor in the processing area of the building.

Cans of raw milk, received from local producers, are unloaded from trucks outside the building onto a continuous can conveyor, which delivers them to the weighing station inside the building. Samples are taken, just prior to dumping. Milk is dumped from the cans into a tank scale and the weight recorded. The empty cans are transferred directly to an automatic washer. Washed and sterile cans continue to the outside of the building and are reloaded on the truck. This milk, following the weighing step, is passed through a plate and frame cooler using ice water as a cooling agent to lower the milk temperature to 36 deg. F. From the cooler the milk is pumped to the insulated sanitary storage tanks.

Milk from storage at a temperature of 36 deg. F. is passed through a filter



3. SANITARY holding tanks, capacity 30,000 gal. milk, are located on mezzanine floor. Milk is held at 36 deg. F.



4. SIGHT GLASSES on the evaporators are located to allow the operator to observe both effects from the same station.

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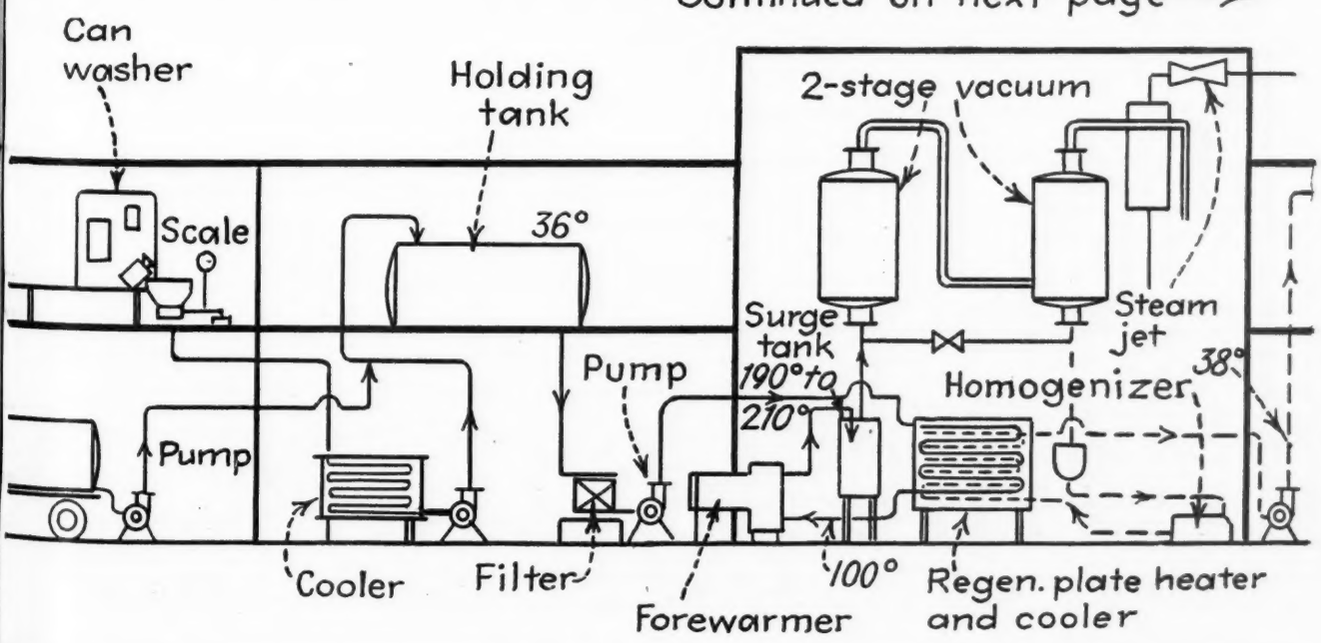


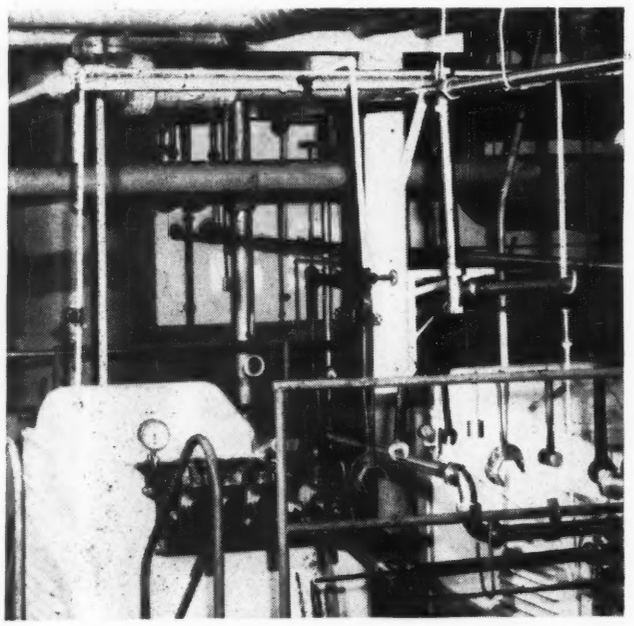
to a regenerative plate heater and cooler. In this unit a heat transfer is effected between the cold milk as it comes from storage and the warm evaporated milk.

Efficient Practice

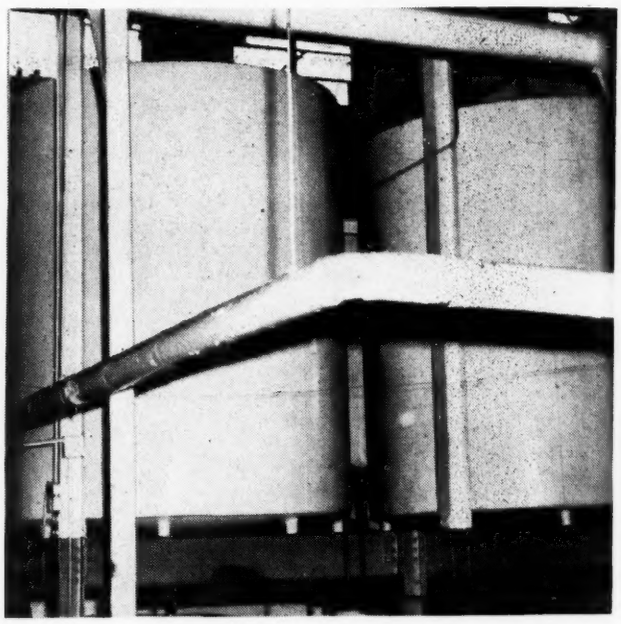
Use of this equipment is a good example of efficient practice in the dairy industry. A double saving effect is obtained, since direct exchange of heat between raw and evaporated milk results in reduction of refrigeration as well as heating load. As is now almost universal, these plate heat exchangers are made entirely of stainless steel. Further, the use of plates lends itself to equipment which can be thoroughly washed and sterilized since each face can be fully exposed for this purpose.

The raw milk leaves this heater at a temperature of 100 deg. F. and is pumped to the forewarmer. The forewarmer, using steam at 8 psi. pressure as a heating media, raises milk temperatures to 190 to 210 deg. F. It now passes to a hot well to be held at these temperatures for approximately 20 minutes.

From the hot well it is drawn into evaporators continuously by vacuum. A two-stage vacuum effect is used, reducing the moisture content of the milk by approximately 60 percent. A vacuum of 27 in. in the final effect is maintained by a steam ejector type condenser. The operation of the vacuum pans and condenser is under automatic instrument control. Evaporated milk from the second effect at a temperature of 120 deg. F. falls into a surge tank feeding the homogenizer. The homogenizer forces the milk through the regenerative plate exchanger. Here, as previously described, a heat transfer is effected between this evaporated milk to be cooled and the raw milk from storage to be heated. Evaporated milk enters the unit at a temperature of 120 deg. F. and leaves at 38 deg. F. At this temperature it goes to storage tanks where it is also tested and standardized prior to canning.



5. **HOMOGENIZERS also function as pumps to force evaporated milk through the regenerative plate heater and cooler.**



6. **STORAGE tanks in the line are employed to assure standardization of the contents of the evaporated milk.**

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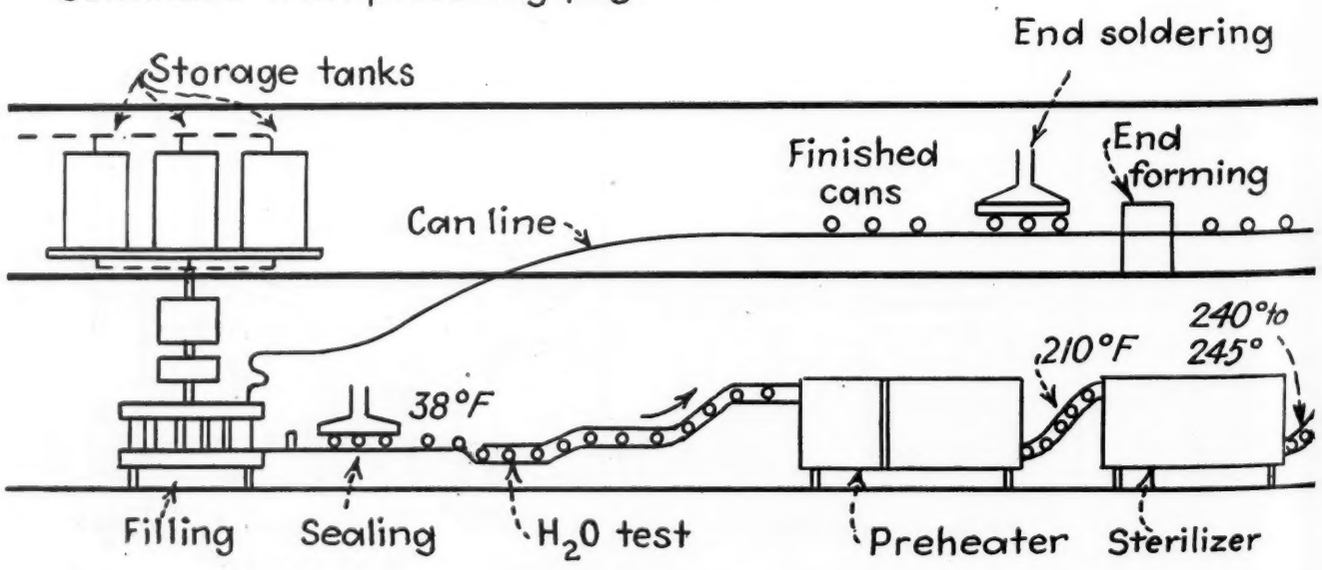
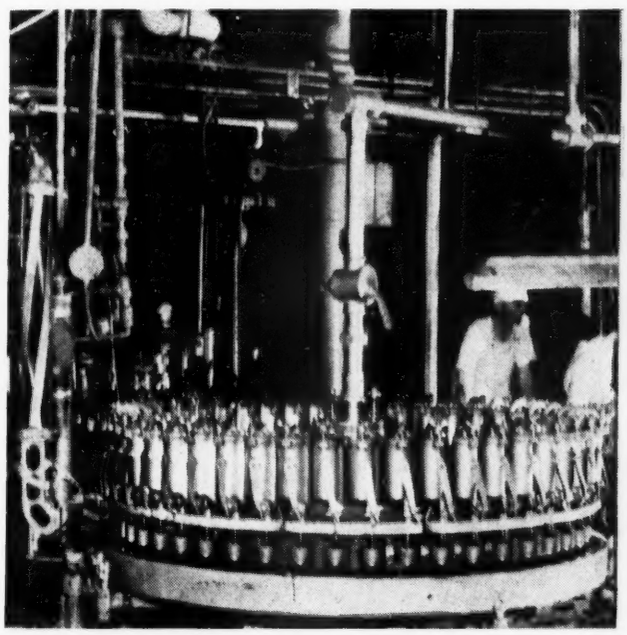


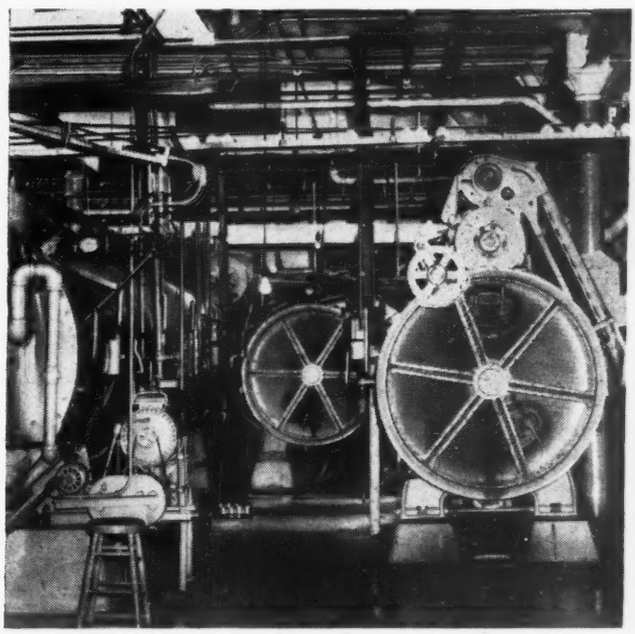
Standardized evaporated milk flows by gravity from these tanks to the sixty-pocket circular can-filling machines. Each can is filled through a small vent, previously formed. After the can is filled, the vent is automatically sealed by spot soldering. The sealed cans next pass through a water trough where they are completely submerged as means of testing for any defective soldering. Operators observe the cans as they pass through the trough, removing any leakers.

The sealed cans of evaporated milk now travel to a continuous preheater, pressure sterilizer, and pressure cooler. These units are horizontal steel drums, approximately 6 ft. in diameter by 30 ft. in length with revolving interior reels. The interiors of the drums are separated into various compartments by baffle plates to maintain variable temperatures. Hot water is used in the preheaters and the unit operates at atmospheric pressure. A steam jacket covers about 60 per cent of the drum. Travelling through the various sections of the preheater, the can is gradually heated from 100 deg. to 210 deg. F. The can at this temperature enters the sterilizer and is heated to temperatures varying from 240 to 245 deg. F. Live steam is used to heat the cans of milk in the sterilizer. This steam pressure in the drums acts as a balance against the internal pressure built up in the can due to heating. The balanced pressures avoid any distortion of the cans. Positive rotary valves are used at the intake and discharge ends of the sterilizer to prevent any loss of pressure. From the sterilizer, the cans are transferred under pressure to the continuous cooler.

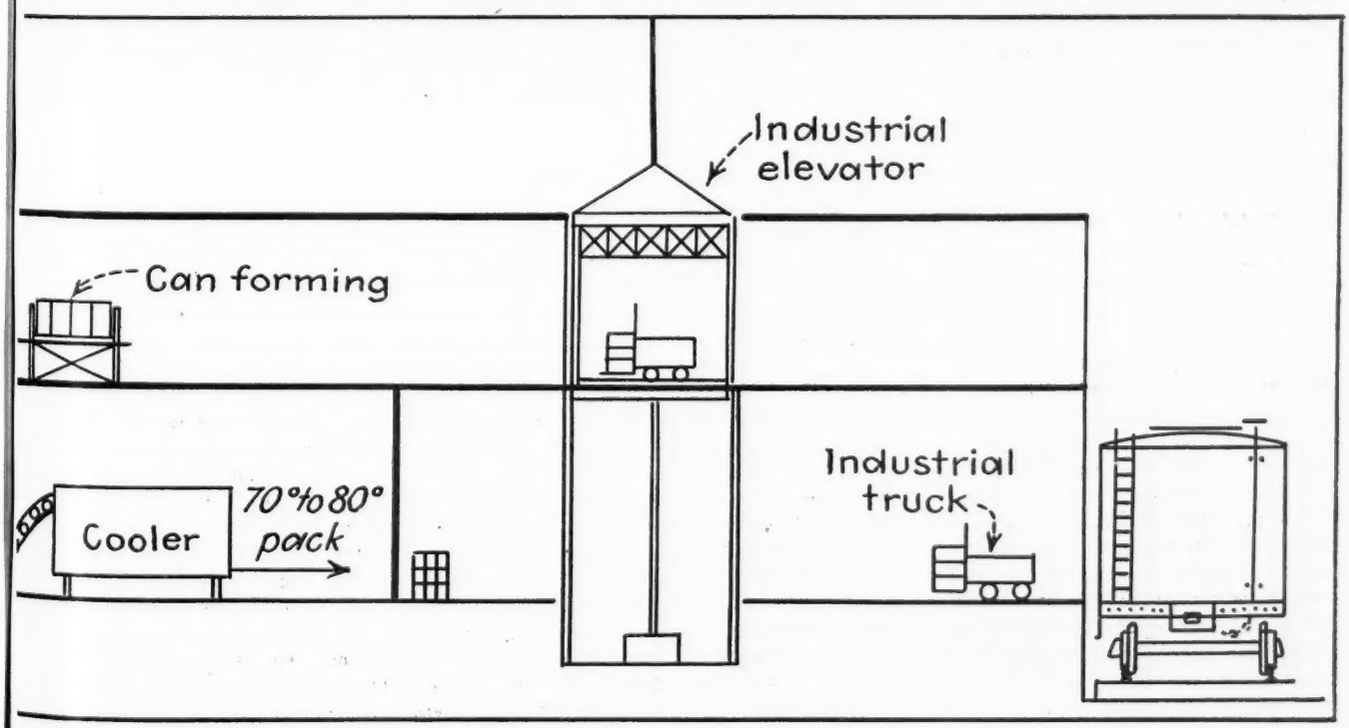
Water is used to cool the cans. The water level is fixed and automatically controlled. Air under pressure is admitted above the water level and a constant pressure is maintained by an automatic controller in the air line. This air pressure balances internal can pressure. At a temperature of 70-80 deg. F., cans leave cooler and go to labeling and packaging.

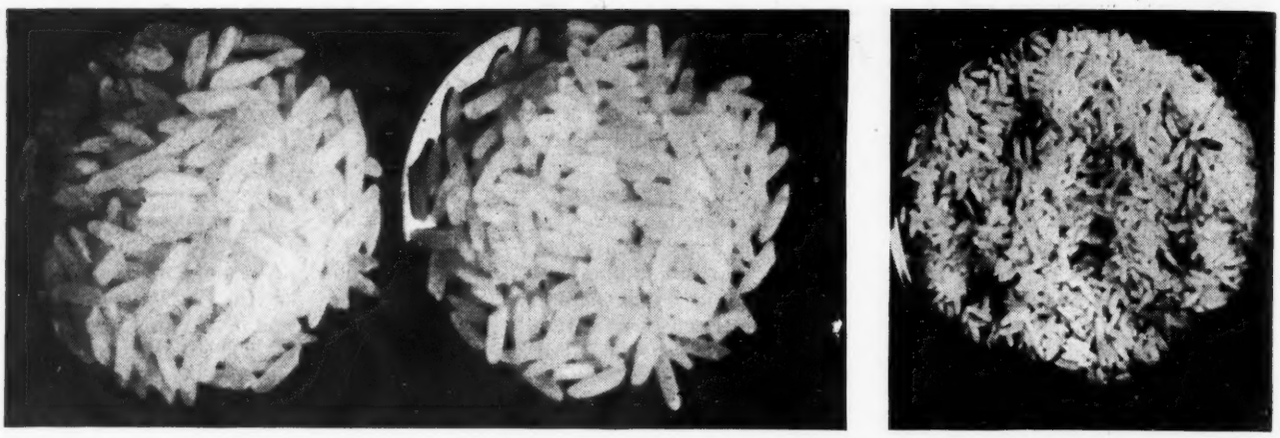


7. ROTARY sixty-pocket fillers are fed by gravity from the storage tanks above. Cans are delivered automatically.

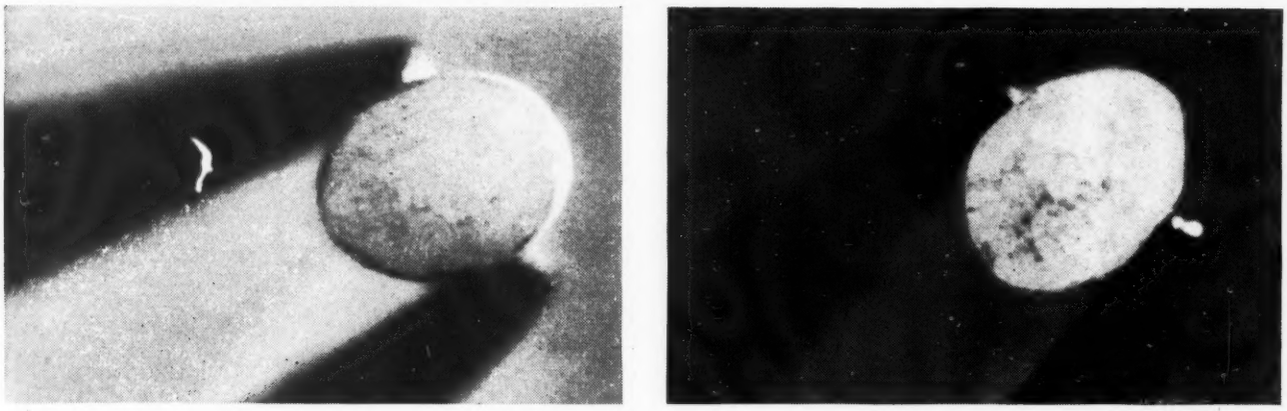


8. CANS of evaporated milk are preheated, sterilized and cooled in these units operated under automatic control.





RICE enriched with premix (left) looks just like plain rice (center). Enriching grains are revealed by rapid iron test (right).



COATING can be seen on cross section of premix grain (left) held in forceps. Compare this with plain rice grain (right).

Coating Process Restores

Nutritionally improved rice, enriched with "premix", under test in Philippines, is

McGraw-Hill World News and F. I. Staff Report

UTILIZING a relatively new method for the nutritional enrichment of cereals, a campaign is getting under way in the Philippines to incorporate vitamins and minerals in rice, which constitutes the chief food of the Islands. This program is of interest to domestic rice millers, and if carried through successfully, it may be adopted in the large rice-using countries of the Orient.

The process differs in principle from rice "conversion", which has come into large scale use in recent years. In "conversion," rough rice is steeped in hot water so that some of the vitamin and mineral values in the bran are driven into the grain, and thus retained after the grain is dried and milled (see June and September 1947 FOOD INDUSTRIES). The method to be used in the Philippines is a direct admixture of highly enriched grains to polished rice which has gone through the usual milling operations. Net result is to restore to the diet a protective level of important nutritional essentials.

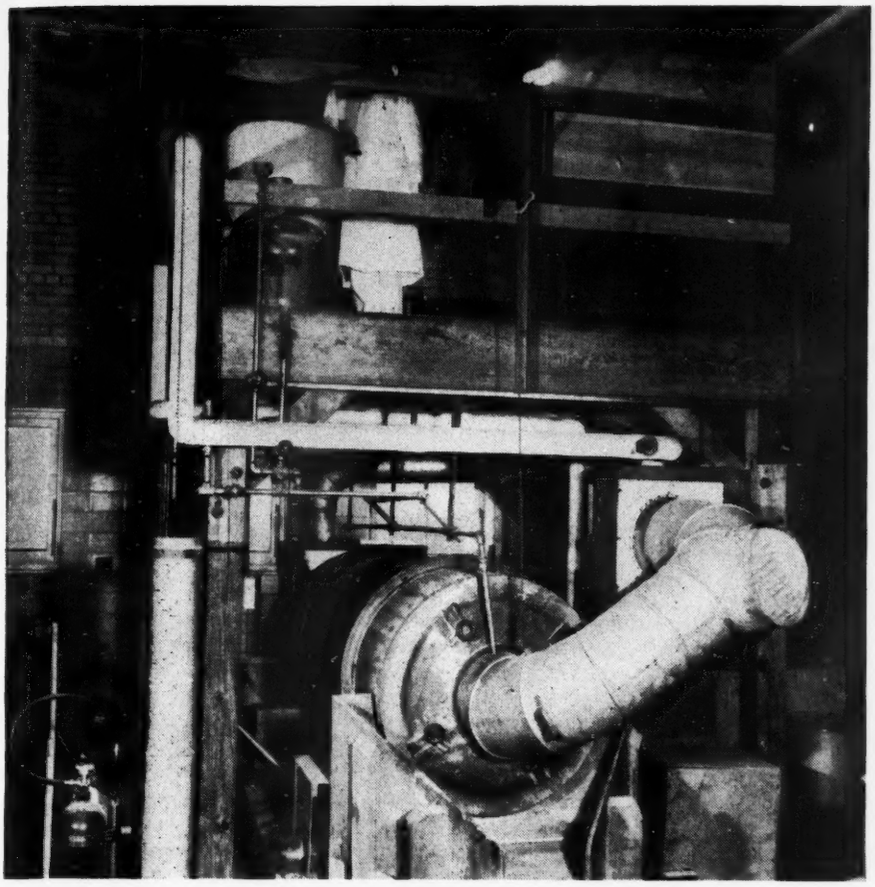
Several United States agencies are cooperating in the Philippine rice enrichment undertaking, which is proceeding in the Philippine Department of Health under the direction of Dr. Juan Salcedo, Jr. The primary objective is to eliminate the deficiency disease, beriberi. The testing ground is the province of Bataan. Success there will justify extension of the campaign to the rest of the Philippine Islands.

The rice enrichment method was decided on in view of the place of rice in the Philippine diet, the established taste for polished rice, and the necessity for getting the processing done with a minimum of machinery or capital outlay. Emphasis is being placed on thiamine in view of its importance in beriberi control. The enrichment grains add thiamine, niacin and iron in amounts approximately equivalent to domestic flour enrichment levels and roughly equal to the thiamine content of the whole rice grain before milling.

Loss Prevented

Significant factor of the process is a treatment which prevents loss of the soluble nutrients when the rice is washed before cooking. Thus it is not necessary to attempt to change the methods used in the home. In making the enriching fraction, polished rice grains are wet down with the enriching solution. When these are dried, a solution of a fatty acid, such as palmitic, in alcohol is applied to them as a protective coating. The enrichment treatment is such that one pound of the "premix" carries sufficient nutrients for 200 lb. of polished rice. Cost is estimated at $0.25 per person per year.

On the score of equipment, an outlay of $10,000 to $12,000 will be sufficient to equip a premix plant and to pay for



PILOT plant turned out the first 2,000 lb. of rice premix for use in the Philippine Islands.

Nutritional Improvement

This article is the third in the new *Food Industries* series on the nutritional improvement of foods.

The introductory article, "Nutritional Improvement Challenges Processors", appeared in the September issue. The second article, "Grocery Stores—Best Source of Vitamins", was published last month.

This month's article deals with the broadening application of a recent technical development in the cereal field. It is presented at this point in the series by reason of its timeliness.

The next article, to appear in an early issue, will discuss in detail the legal pitfalls and requirements with which the processor of an enriched improved food should be familiar.—*The Editors.*

Process Summarized

←Vitamin solution from carboy on platform is sprayed on grains in small scale trombol, then dried on with hot air entering through duct. Then palmitic acid is applied in alcohol solution. Before grains are dry, an iron-talc mixture is dusted on.

Vitamins to Rice

now being produced for the domestic market also

mixing machinery for the rice mills supplying the 100,000 residents of Bataan. In comparison, the cost of a plant for the conversion process would be several times larger. The machinery for the Philippine project is being provided by the U. S. Public Health Service, under provisions of the Tydings war damage act, which made $12,000,000 available for the rehabilitation of the health services of the Philippines, over a five-year period.

Initial quantities of the enriched rice grains were sent over some time ago by Hoffmann-La Roche, Inc., which did some of the development work on the product. It is understood that this firm will supply premix for the campaign for a year, the length of time required to get premix production in full swing in the Philippines. Total premix shipments to date exceed 36,000 lb., estimated requirement for the first six months of the program.

Important for the eventual success of the campaign is an elaborate medical survey now completed. This has been made possible by a $25,000 grant from the Williams-Waterman fund of New York. One of those most interested in the success of the undertaking is R. R. Williams, known for his work on thiamine. The medical fund has made it possible to find out how common beriberi is, prior to the start of the campaign. It will indicate also whether near-deficiency conditions can be revealed by relatively simple tests.

As part of the medical survey, both physical examinations and laboratory tests were arranged for a segment of the Bataan population. Of 12,000 natives examined, 1500 cases of beriberi were discovered. There were 105 deaths from the disease while the medical survey was being conducted. A report on the extent of beriberi prior to enrichment will be published in the near future in the Journal of Nutrition.

The Bataan enrichment campaign is to run for a year or more. A second medical survey at that time will indicate the degree of success in beriberi control. There may be other nutritional information disclosed also, since the enrichment is not limited to thiamine but will include other vitamins and minerals. It is hoped that the campaign will be continued and enlarged, with a smooth transition to a scale which will take in the whole of the Philippines.

Used in United States

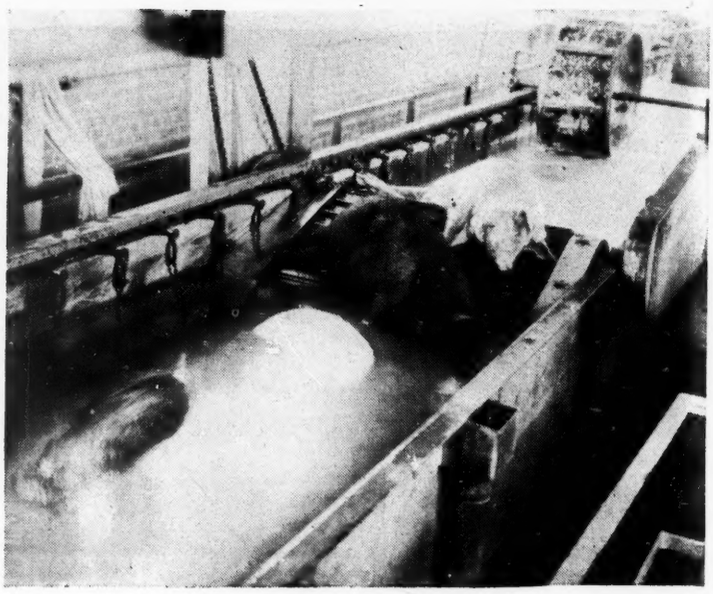
Domestic interest in the premix enrichment process will be heightened by the operation of a special plant at Crowley, La., which will serve some 30 rice millers in the Texas, Louisiana, Arkansas area. The plant is owned by Rice Enrichment, Inc. A variety of enrichment products will likely be available, depending on the nutrient content desired. In the case of the Philippine material, for example, no riboflavin is being used, because of discoloration. Although not harmful, a change in color might interfere with acceptance of the product, or result in the colored grains being picked out and thrown away. It is understood, however, that acceptable methods for incorporating riboflavin along with other ingredients, without the discoloration difficulty, may be developed. An aim in the present Philippine campaign is to get the vitamins into rice with a minimum of change in its taste and appearance.

(*Continued on page* 214)

THESE ADVANCES

- Simplified Operations and Handling
- Better Canned and Packaged Meats
- Improvements in Making Lard
- Advances in Refrigeration
- Higher Standards of Sanitation
- New Training for Personnel
- And New Research Facilities

ARE AMONG THE—



Plant Operations

IN IMPROVED de-hairing technic, hogs are immersed in cold water dip tank before they are carried to the scalding vat.

Significant Developments In the Meat Packing Industry

By HENRY D. TEFFT, Director Department of Packinghouse Practice & Research, American Meat Institute, Chicago

TODAY, developments in the meat packing industry are simplifying operations, and are responsible for new and better quality meats and meat by-products.

This progress is being achieved through improvements in equipment, refrigeration, materials handling, packaging, and sanitation. Personnel training programs and research conducted by meat packers and the American Meat Institute Foundation also are playing important parts.

It must be emphasized, however, that such developments are not taking place overnight. Thorough studies and tests precede successful steps. Gradual is the word for it. In this article we will review some of the improvements.

Dehairing Hogs

Complete dehairing of hogs always has been a major problem for meat packers, particularly in the late fall and early winter months when hogs grow new hair. In the past, methods have included various treatments using hog-scalding water, on the theory that if the water were properly conditioned, it would more readily loosen hair roots. Also recognized was the importance of scalding tubs having sufficient capacity to permit immersion of the hogs. They go in water not over 140 deg. F. for a specific length of time. Of course, maintenance of dehairing machines in top operating condition always has been a "must."

In spite of precautions, packers continued to have trouble in obtaining satisfactory dehairing results. Development of the rosin depilatory method was welcomed, therefore. This method constituted a big advance in the art of dehairing, although it has not proved the perfect answer.

Recently, packers have been installing a "cold water dip" tank (see photo), in which the hogs are immersed for a short time prior to being placed in the scalding vat. The results from this pre-dip method have satisfactorily loosened hair from the hogs.

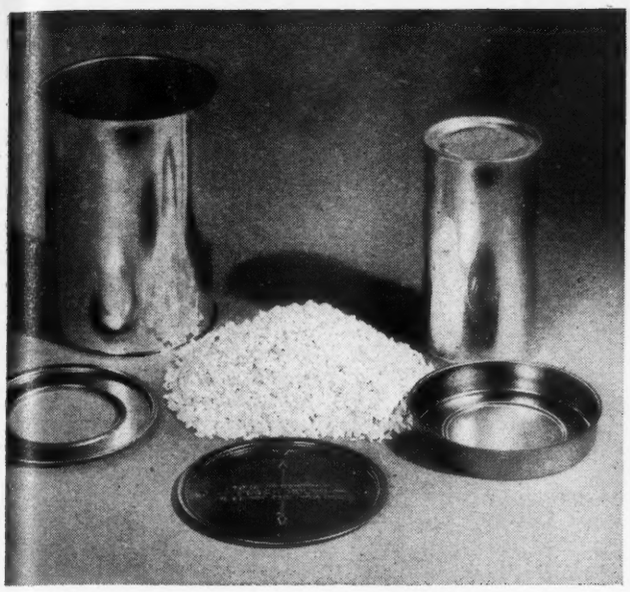
Much interest is currently being shown in possibilities of the brining method of preparing hides for the tanner. Briefly, the method consists of submerging hides in a vat of brine at 70 deg. F., or lower. During the first half of this period, the hides are kept in motion by mechanical means, and the brine is continuously circulated through a salt restrengthening box to keep it from becoming too low in salt content.

Brine-Curing Hides

On removal from the brine, the hides are drained for a short period, then spread flat in packs without further salting. At stated intervals, the reused brine is heated to coagulate the blood proteins, the brine being simultaneously clarified. As an additional precaution, the brine is treated with sodium hypochlorite after removal of each batch of cured hides, in order to keep the bacteria count to a minimum.

For some time, packers have been reluctant to incur the expense of installing equipment required for brine curing. They have believed that this method required more labor than conventional green salting. However, experience of plants actually using this procedure indicates a net saving in the brining method. Accordingly, many packers are giving serious consideration to brining, particularly noting its advantages, such as a cleaner hide, a quicker and more uniform cure, freedom from "salt stain," and a more rapid turnover.

There might have been more general



Chemical Inside Double Container . . .

. . . Heated These Hamburgers

"HOTCAN", made up of a can within a can (left), permits housewife to heat various canned foods within 12 min. (right), without use of flame or fire. All she does is punch holes in outer can, then a liquid and chemical reaction produces heat to warm foods.

acceptance of this method today, if an insistent demand for its adoption had come from the tanning industry as a whole. Since brined hides require no different processing in the tannery, including the "beam house," it is only to be expected that this method of cure will some day become general.

Better Canned Meats

The war gave impetus to development of new canned meat products and to new processing procedures which guarantee the maintenance of quality under all manner of storage conditions. As a result of these technics, both quality and appetite appeal of canned meat items generally are higher than they were prior to 1940.

Because of the large amount of canned meat eaten by members of the Armed Forces and the periodic shortages of fresh and cured meats in the domestic market during the war, many new consumers began to accept canned meats. Today, the canned meat industry seems to be holding a good percentage of new consumers.

Steps which are being taken to maintain the greater demand for canned meats include national advertising on an industry basis; individual company research in improvement of variety and quality; and research on the possibilities of high frequency cooking.

One relatively new canned meat development is the packing of "complete meals in cans." Various food combination, not heretofore put up, are now available commercially. These include such items as frankfurters and sauce, corned beef and cabbage, and spare ribs and sauerkraut.

Another interesting trend has been the development of cans to meet the special requirements of the product. One example is the development of a D-shaped can used by one canner for sterile packing of a portion of a ham. Another example is a can for wieners which includes barbecue sauce in a paper bag. The housewife can apportion the sauce, as suits her taste.

A rather unusual development which has excited the interest of meat canners is the "Hotcan," actually a can within a can. The outer can has two compartments. One contains a liquid and the other a chemical. By punching holes in the outer can, liquid and a chemical unite to produce heat, without fire or flame—thus conveniently heating the food.

There has been considerable discussion for some time about the possibilities of marketing a large number

A SPECIAL FI REPORT

of packinghouse products in frozen form in retail consumer packages. The savings and advantages of such a system have been detailed at length.

Despite all the talk, packers have been slow to venture into this new field. They have, however, consistently placed a few items upon the market, although not in large volume. These include hamburger, fabricated steaks, meat patties, sliced meats, lamb chops, pork chops, corned beef hash, veal, lamb and beef stew, and beef goulash.

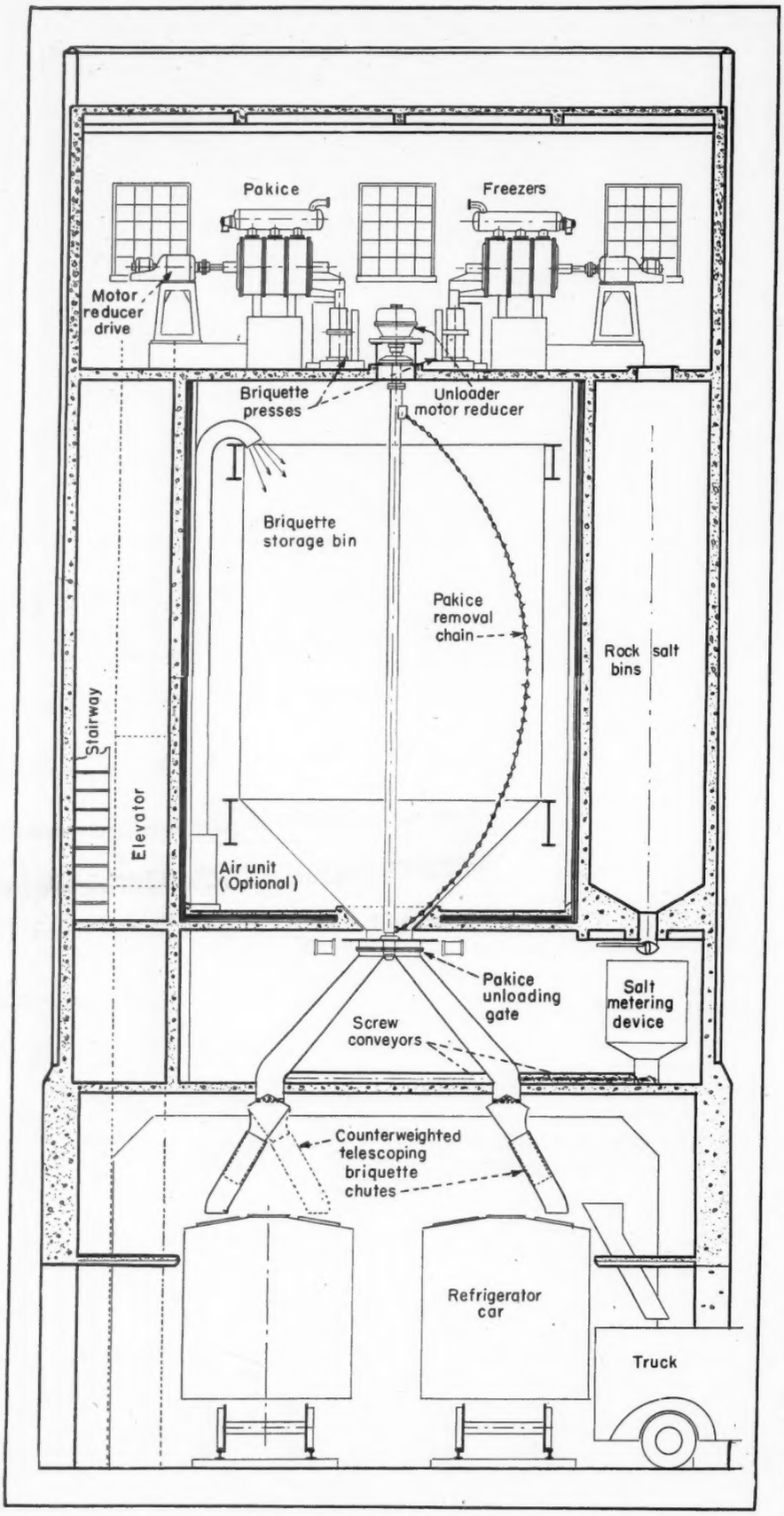
Another development is prepackaging of fresh cuts at the retail level, which may decrease the demand for prepackaged frozen consumer meat cuts. A growing number of stores are preparing such consumer cuts, wrapping them, and placing them in refrigerated self-service display counters. These counters are open at the top, but are blanketed with cold air.

The meat is pre-cut, placed upon a cardboard backing, and then wrapped in a special type of transparent paper. The name of the cut, its weight, and the cost per pound and per package are shown on each item. The different cuts are replenished as fast as sold.

The customer merely selects the piece she wants and puts it in her shopping basket. Furthermore, the housewife can follow her usual cooking schedule as distinct from a frozen product, which requires a cooking procedure often unfamiliar to her. Increased sales usually are reported wherever this system has been installed, because of the favorable reaction of customers. Cuts are available for inspection before selection, and bottlenecks are eliminated at meat counters.

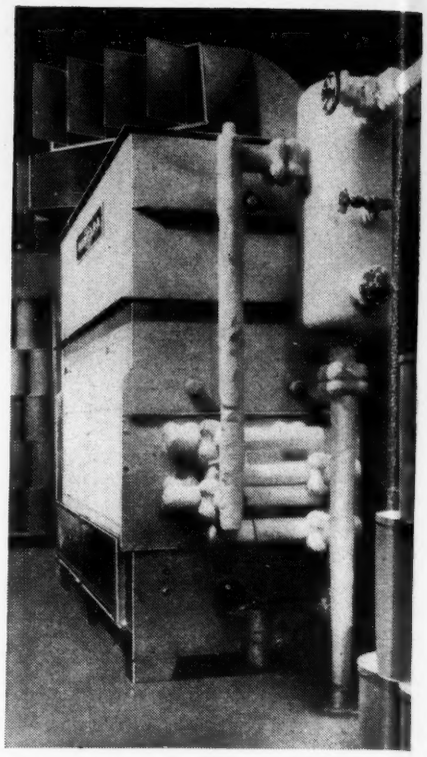
An indirect result of this type of service undoubtedly will be a growing pressure upon meat packers to enlarge their production of items which experience has shown can be prepackaged by them satisfactorily. Examples are smoked pork butts, beef tongues, jowl bacon, and dry sausage.

Recently a new machine has been placed upon the market which facilitates the removal of skin from fresh pork cuts. Originally employed for skinning shoulders for the manufac-



Car-Icing Layouts Save Floor Space

In plants where trend is toward maximum use of such space, Pakice, flake-ice, and tube-ice equipment are being installed. Such units take up considerably less space than conventional equipment for icing refrigerator cars. Also, such car-icing layouts can be located wherever sufficient spare space is available.



NO-FROST FREEZERS now keep refrigerant surfaces constantly free of frost.

ture of canned luncheon meat for the Army, its use has been extended to many other pork cuts, such as fresh backs and bellies, and particularly to smaller cuts, such as jowls. Adoption of this machine has enabled packers to take advantage of a more profitable outlet for skins—as a raw material for the manufacture of gelatin.

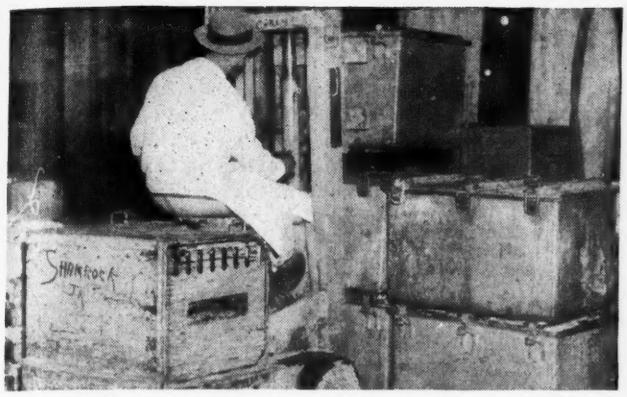
Another relatively new machine is one which places a band around each link of smoked sausage and enables a packer to maintain the identity of his product up to the time of its purchase by the consumer.

Much attention is being paid currently to the design of smokehouses that provide uniform air circulation under closely regulated temperature and humidity conditions. Coupled with this has been a demand for a method of producing a clean smoke of controllable density and temperature. A number of "smoke makers" have been placed on the market to meet this demand.

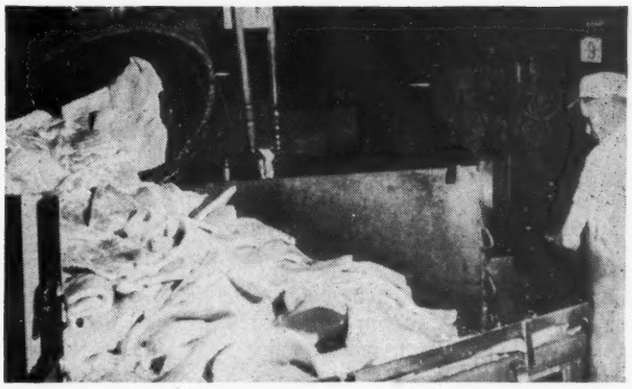
New pieces of equipment being tested in a few plants may have some possibilities. One is a filter press for clarifying and bleaching lard. It eliminates the use of press cloths, is said to be more easily cleaned than the old style plate press, and reduces losses from fat absorption. A new beef and also a new hog splitting saw recently have been placed on the market. Also a saw for dehorning cattle heads.

More attention is being paid to the

Advanced Materials Handling Methods Are Reducing Re-Handlings



FORK TRUCKS haul cured meats to various operations in original containers, thus eliminating handling in and out of containers.



AUTOMATIC dumper, one of newer materials handling devices, can unload 1,600-lb. vats of bellies onto processing tables.

possibilities of centrifuges as a method of separating solids from liquids—a speedy, continuous method requiring little space. There have been a number of installations for the clarification of oleo stock prior to graining. Some of these have been for the separation of grease and fines from tank water prior to its evaporation. There is a possibility that centrifuges eventually may replace the hydraulic press for the recovery of grease from wet tankage in the wet rendering system.

Quality Lard

Lard is a specific packinghouse product for which improved quality has been sought. In recent years, processors have been developing methods of producing a mild flavored lard of pronounced stability and firm texture. The addition of hydrogenated lard in small percentages to their regular production enabled packers to supply the Army with a lard which retained good texture, even under severe temperature conditions.

Use of hydrogenated lard as an ingredient in the product marketed for domestic use was retarded until recently by the limited supply available. Manufacturers of hydrogenated lard now are increasing in number, and undoubtedly the time soon will come when any processor may obtain this type of lard for compounding with his regular production.

Many packers are improving lard texture through the installation of Votators, which chill lard rapidly and also enable a small but definite percentage of air to be homogenized effectively with the lard. This enhances the ability of the lard to withstand high temperatures without excessive softening.

Stability of the lard can be improved by the addition of anti-oxidants, a number of which are now marketed. However, many of them have failed to retard rancidity in the end products, as for example, crackers.

The American Meat Institute Foundation, which has been working on this problem for a long time, recently perfected an antioxidant, designated AMI 72, which does have the characteristic of protecting baked goods adequately from developing rancidity. It is expected that this antioxidant will have wide acceptance.

A few packers are installing equipment for deodorizing lard—the final step in producing a bland or tasteless type of lard shortening.

Also, a consumer package for lard is sought which will eliminate the many objections to present paperboard cartons. It should cost no more than the present package, and it should lend itself to mechanical handling.

Progress in Refrigeration

There has been a growing recognition that fast chilling does not necessarily mean higher shrinkages, but actually, under certain conditions, may mean smaller shrinkages. Consequently, many new installations now provide for rapid chilling of products such as smoked meat and even for cooling products such as livers in chambers or tunnels in which very cold air is circulated past the product at high velocities.

Freezing chambers and tunnels also are replacing shelf coils and low temperature rooms for the sharp freezing of product prior to placing it in freezer storage. Large volumes of air are moved at high speed, 500 ft. per min. or higher, past the chilling medium. The temperature of the air is lowered to —30 deg. F., or less, and then it is passed over the product. At these low temperatures, there is little pickup of moisture by the air as it passes the product.

As for procedure, the product may be placed in the tunnel on trucks or carried through on conveyors. Use of the chamber or tunnel system saves time and floor space. Many freezers where product is stored in packages are now refrigerated by similar forced air circulation systems, rather than by banks of direct expansion or brine circulation piping.

Where blower units are used for maintaining temperatures in a freezer, the problem arises of keeping the refrigerant surfaces free of frost. Usually this is accomplished by spraying the coils with calcium brine. Because of the low temperatures, this brine has to be kept concentrated. The brine is too expensive to discharge to the sewer at the concentration used in a freezer. Consequently, some method of continual concentration must be used.

One manufacturer of blower equipment has designed a unit which utilizes electrical current for supplying heat to concentrate brine. A few of these installations, said to be very satisfactory, are now in operation. Cost of operating this equipment must be balanced off against the old cost of defrosting the piping in a conventional freezer installation and the loss of efficiency if the piping remains coated with frost.

Experiments conducted by the U. S. Dept. of Agriculture and other public agencies have indicated that the lower the freezer storage temperature the better is the maintenance of product quality, all other conditions being the same. This progressive improvement in quality is quite pronounced down to 0 deg. F. But as temperature goes lower, improvement levels off somewhat. This knowledge, coupled with the low temperature specifications covering purchases by the Armed Forces during the war, led to a wider adoption of freezer storage temperatures in the 0 to —10 deg. F. range, and in some instances even lower ranges. Also, importance of closely controlling the freezer temperature with a minimum of variation is now generally recognized.

Cold product, when exposed to a warm atmosphere, becomes coated with a film of moisture—a condition for the growth of mold and slimes. In an

effort to insure that products reach customers in top condition, packers are making greater efforts to provide protection from exposure to radical changes in temperatures up to the time of delivery. This has led to refrigeration of cutting and boning rooms and loading docks, and provision of auto delivery trucks with efficient cooling systems.

Improved Materials Handling

The abrupt rise in wage rates in recent years has caused packers to study their methods of handling products in an effort to eliminate, wherever possible, all re-handling operations. There is now greater use of fork-lift trucks and sometimes design of special devices for operations peculiar to a packing plant, such as equipment for dumping 1600-lb. vats of hams in one operation.

In some plants, cured meats are no longer handled in and out of containers for pumping, curing, then soaking and washing. Instead, they are transported from the cutting room in the original containers, going on lift trucks to the points where these operations are conducted.

Packaged lard, canned goods, and bagged products are being moved upon pallets from the point of production to the point of shipping, with a minimum of re-handling of individual packages. Movement of product in this manner often necessitates building alterations, because more aisle space is required, also larger elevators, and floors designed for heavier loads.

Wherever feasible, the multi-story design for new plants is being replaced by one- or two-story designs, with accent on elimination of elevators as a method of moving product. Vertical movement of product has proved expensive, because when goods are moved by elevator, there must also be a horizontal movement to and from the elevators. In addition, there is always a certain amount of delay in waiting for elevators to arrive to receive loads also a time loss in loading and unloading. These costs are eliminated in horizontal movement of products on one floor level directly from one point to another.

The trend also is toward maximum use of floor space. One illustration is the selection for car-icing layouts of Pak-ice, flake-ice and tube-ice equipment. This kind of equipment occupies so much less space than a can-ice layout that location of the car-icing installation is possible where it can be most effectively used rather than where sufficient space is available and can be spared, as is necessary for a can-ice installation.

Complete elimination of flies, rats and cockroaches in packing plants is another step in raising standards of sanitation to equal, if not excel, any other food producing industry.

During the war, DDT was developed, later to become available to the meat packing industry, which used it to control flies. The results have been very satisfactory. DDT has also been effective against cockroaches.

Use of ANTU

Recently, the Meat Inspection Div. of the U. S. Dept. of Agriculture has approved the use of ANTU in packing plants. This is a more important rodenticide than red squill, used for many years by the industry.

The special emphasis being placed by the industry upon all forms of sanitation has brought increasing employment of bacteriologists. Their work is not only sanitation control, but also education of personnel on the need for highest sanitation standards and the means by which such standards can be attained.

In one instance, a member of the Institute reported that the vinegar in which one of his items was packed became so cloudy that the packaged product was unattractive, although entirely edible. Tests by our bacteriologists indicated that the vinegar contained harmless bacteria which were feeding and multiplying on the sugar used in the formula. It was an entirely unexpected development—a condition which probably would not have been explained if the services of a bacteriologist had not been available.

Personnel Training Programs

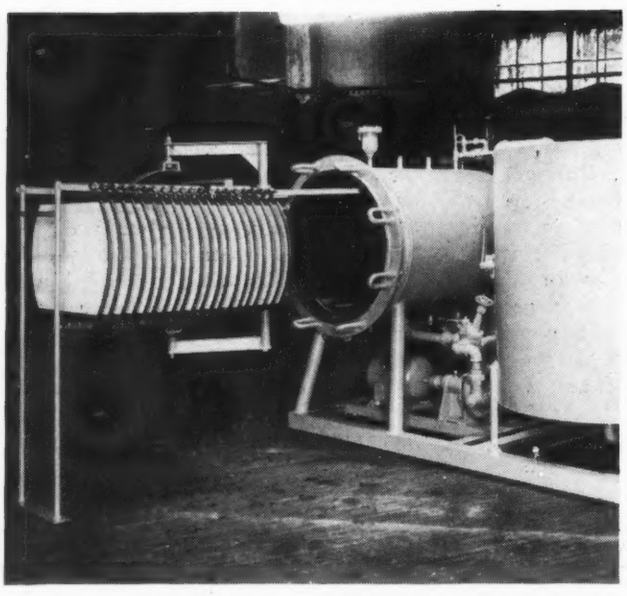
The meat packing industry recognizes that it must have highly trained and efficient personnel to produce products of the highest quality. Consequently, it is promoting education patterned after the Training Within Industry programs sponsored by the War Manpower Commission to keep war industries operating at high efficiency. These programs should noticeably improve efficiency.

Operating a plant safely is an objective sought by all packers, hence the programs stress the safe way to conduct specific operations.

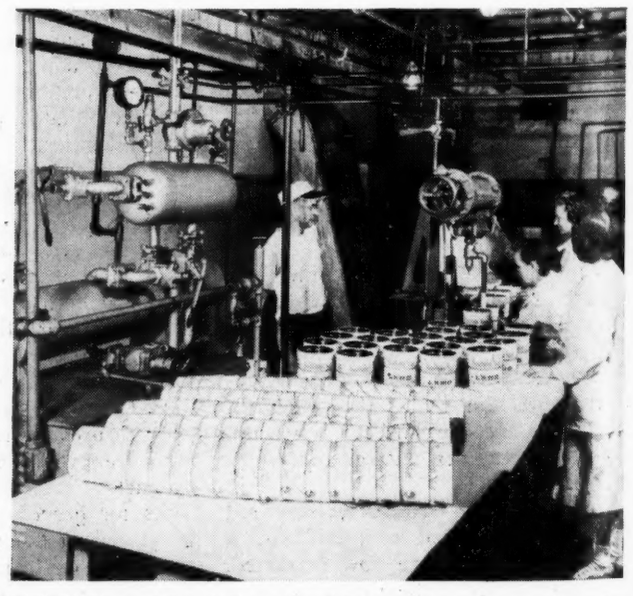
Falls on slippery floors are one of the main hazards in a meat packing plant. This problem has been given much study. At present, there is no flooring material available which has proved "non-slip" under all of the

(*Continued on page* 211)

New Equipment Is Being Used To Improve Quality of Lard



FILTER PRESS for clarifying and bleaching lard eliminates use of filter cloths and is easier to clean than old plate press.



VOTATORS rapidly chill lard and homogenize air, enabling the product to withstand heat without excessive softening.

ACL Bottles Help Cut Costs, But Still . . .

It's Tough At 5c.!

With costs up over 50 percent and reduction in bottle size impractical in most cases, bottlers face serious dilemma in trying to hold 5c. price

By WILLIAM E. MANKIN, Publicity Director, The Grapette Co., Camden, Ark.

DURING the next few months, and particularly at the forthcoming national convention in Atlantic City, the nation's bottlers will be seriously discussing their biggest problem—how to maintain the 5c. selling price.

No other consumer item in the food industry is still available in the same quantity, with the same quality, and at the same consumer price as in pre-war days. It is true that in some places you are still able to purchase certain food items, such as candy and ice cream, in a 5c. package. Yes, the same price is there and the same quality. But check the quantity! The candy bar now retailing at 5c. is one-third or even one-half smaller than the bar you bought for the same price prior to the war.

You can still buy a 5c. ice cream cone, but instead of a "double decker", you get a small, very carefully molded scoop for your nickel. What then is the secret possessed by the American soft drink industry that permits the purchase of such a beverage at 5c.?

The struggle to maintain this retail selling price, in the face of continually rising manufacturing and distribution costs, has been hard and bitter. The entire industry pledged itself after the war to hold the line on the traditional wholesale price and thus permit retailers to keep the 5c. selling price. But holding the line has been difficult, even for the largest bottlers. For the average bottler, it has been an extremely tough job.

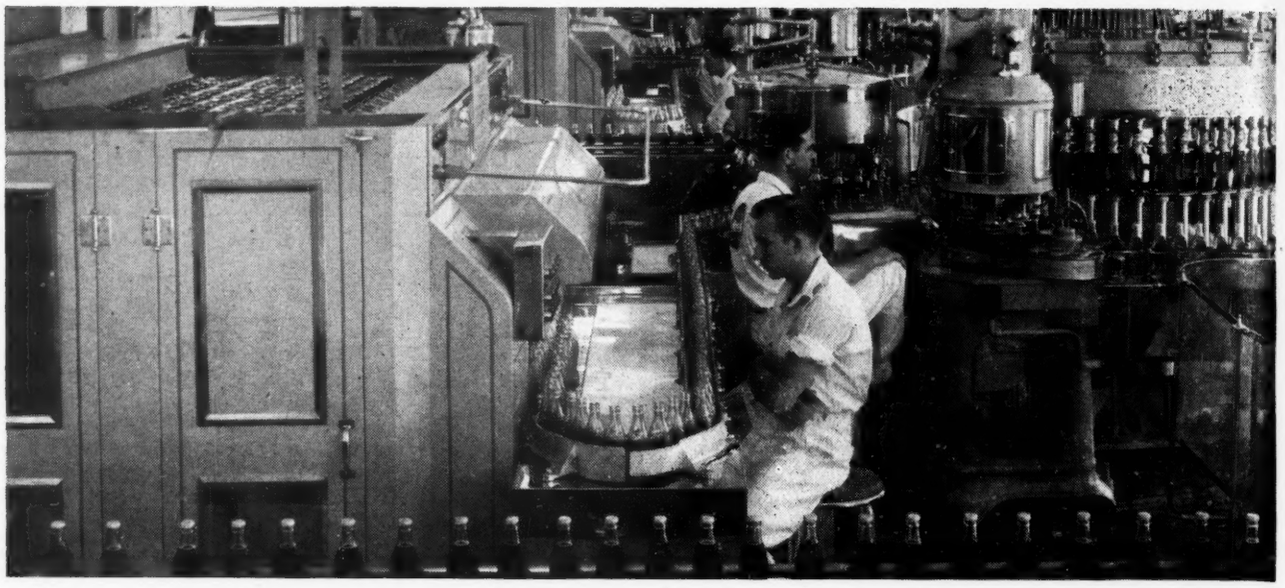
Unlike the candy and ice cream branches of the industry, the carbonated beverage industry is unable to cut the size of its package below a certain established minimum. A large proportion of the soft drinks sold in America today are in 6-oz. bottles. It has been determined that this is the minimum-size package for a soft drink if it is to be acceptable to the public.

Some companies, heretofore merchandising in 12-oz. bottles, now seek to reduce the size of their package to 8-oz. or less. While bottlers producing merchandise in 10 or 12-oz. bottles can effect a reduction in cost by reducing the size of their bottles, the majority of the bottlers cannot make such savings.

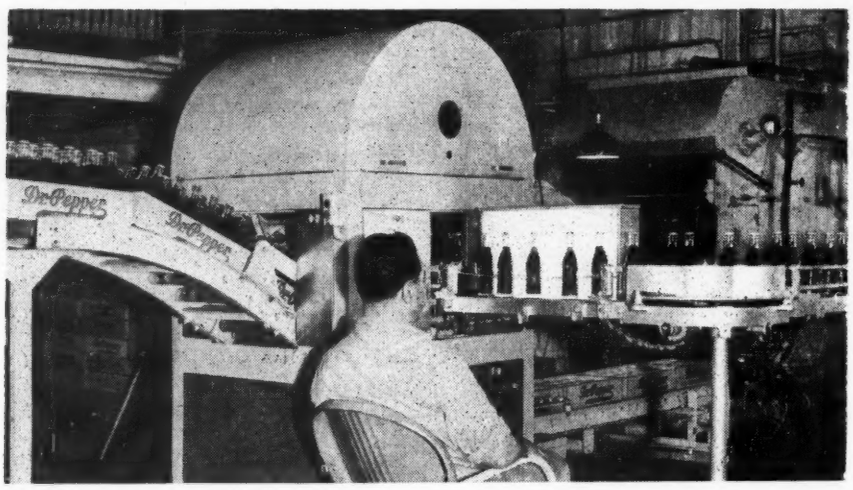
An important item, however, in changing to a smaller bottle is the cost of new bottles. The investment in bottles often equals or exceeds the bottler's total investment in all of the other departments of his business. It is no small matter, then, to change the size of the bottle.

There are certain controllable factors that have contributed to more economical production methods and greater efficiency in bottling plants. Better trained personnel is one of the greatest needs in the industry. To teach production workers, the American Bottlers of Carbonated Beverages has conducted special technical courses at some of the nations leading colleges. Such courses have been presented at Drexel Institute, Texas A & M College and Oregon State College. The curricula have been directed by the industry's outstanding technical experts and have proved very successful.

New Washers, Fillers and Casers Pare Costs



Large high-speed bottle washers and fillers like these increase efficiency and affect economies in big soft drink bottling plants.



Automatic casing machines, fed by conveyors, handle up to 300 bottles per minute.

Education of sales personnel has been an entirely different problem. In an effort to meet the needs, ABCB named Trade Ways, Inc., of New York City, to develop a special sales training program for the industry. This program will be put before ABCB members at the forthcoming convention at Atlantic City.

Uniform cost accounting and record systems, unfamiliar to many small bottlers, are already available to members of ABCB. Reliable records and efficient management are necessary to the proper control of sales and production departments.

Recent technological developments include the following: Improved bottle washing and filling units with larger capacities and greater speed; automatic case unloaders and case packers; automatic carbonation controls; the "premix" system; and the introduction of ACL (applied color label) bottles. All these have played an important part in reducing operation costs. Such things as conveyors, lift trucks and elevators contribute to more efficient handling.

Many of America's bottlers are affiliated with "parent companies" who offer services not ordinarily available to the average small bottler. These parent companies, through research, have developed special designs for bottling plants which permit the greatest possible production with the lowest cost in compact streamlined plant buildings. When bottlers are unable to build new plants, the parent companies will provide engineers to redesign existing facilities to effect the greatest possible economies and to increase production.

Those bottlers with equipment already installed have had to turn to other devices to effect economies and to increase efficiency. Case conveyors, carrying empties to the bottle washers and fulls to storage and loading areas, have aided immeasurably. Automatic bottle casers capable of handling up to 300 bottles per minute from one, two or even three production lines, and new automatic inspecting devices that are far more effective than the human eye, cut down on labor costs. The small plants unable to afford powered lift trucks for handling heavy loads have been able to utilize small hand trucks using flats or skids for loads.

It would be impossible to list all the beverage industry refinements that have effected savings in labor and materials. Neither would it be possible, within the confines of this article, to enumerate all of the efficiencies, made possible throughout the industry, which have contributed to greater production and lower costs.

Price Threatened

But in spite of all the improvements in equipment and methods of operation, rising costs threaten to put an end to the traditional 5c. bottle of soft drink.

Listed below are a number of items, the costs of which are uncontrollable, together with the percentage of increase in the cost of these items over prices existing before the war:

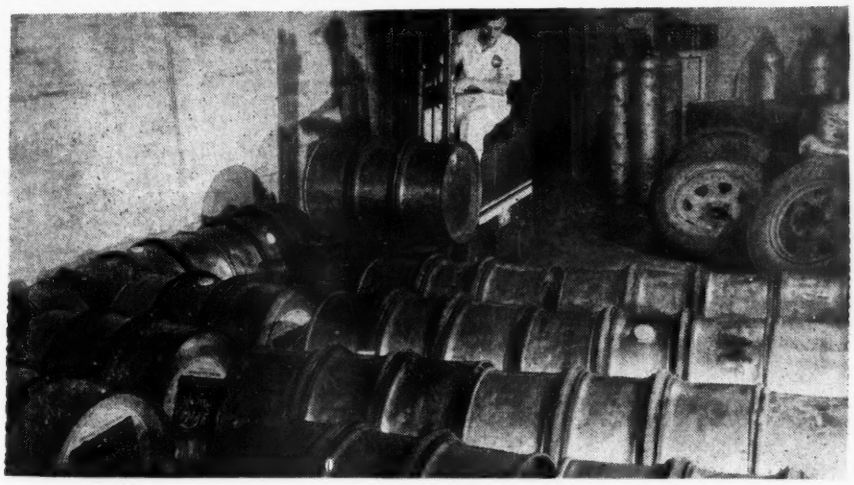
Machinery 50, trucks 60, sugar 75, gasoline 50 to 60, crowns 30, bottles 40, cases 50, taxes up to 1,000, rent 15 and up, labor 100, insurance 50, freight rates 50 and truck bodies 50.

These increases must be absorbed by each bottler, large and small.

With 1947 consumption at an all-time high, most bottlers were able to introduce certain technical improvements contributing to greater plant efficiency and more economical operation. However, even the very large plants that were able to introduce all technical developments have not found the solution to their problem in volume

Fork Trucks Contribute To More Efficient Handling

Semi-trailer holding 1,080 cases is quickly loaded or unloaded with fork trucks. All cases are palletized, whether filled or empties.



Drums of syrup are easily moved with gas-powered fork truck. (Clark Tructractor photos)

alone. One bottler, who sold 8,000,000 cases in 1940 and earned a net profit of 12.24c. per case, sold over 14,000,000 cases in 1947 and made only 6.35c. per case.

The average soft drink bottler has increased his selling price as the cost of manufacture has increased—and justifiably. The traditional wholesale price of soft drinks is 80c. per case. To illustrate how rising costs have affected some bottlers, a bottler on the West coast produced 6,000,000 cases in 1947 and although selling at 90c. per case, earned only 5.6c. per case net. Obviously, if this bottler had sold at the traditional price of 80c. a rather large loss would have resulted.

The beverage industry is, frankly, facing a very serious dilemma. It is fair and just that bottlers should have an increase in their wholesale price, for without it, many will be bankrupt. As such increases are contemplated, the industry looks back on experiences where price increases have greatly curtailed consumption and sales. If the 5c. retail selling price can be maintained, sales will not suffer. If the retail price is increased to 6c. or more, sales resistance will be encountered.

In the past two years, several bottlers of 12 oz. merchandise have increased their wholesale price to 96c. or $1.00 per case. But in most markets, sales resistance resulting from increases in the retail price, was so intense that prices were again lowered to the traditional level.

Pennsylvania, in 1947, initiated a 1c. per bottle soft drink tax. This forced the price of soft drinks to 6c. per bottle, and the bottlers subsequently experienced a loss of from 25 to 50 percent in their sales.

One of the greatest problems confronting soft drink bottlers is that of bottle and case deposits. Although the amount of money collected for a case of bottles varies greatly across the country, a great many bottlers are still charging a deposit of 50c. With the cost of bottles and cases up 50 percent, deposits remain approximately the same as prewar. At the present level, it is doubtful that deposits cover losses.

Recently, the National Soft Drink Institute was organized in Chicago. It is comprised of representatives of some of the nation's leading carbonated beverage parent companies. One of its avowed intentions is to raise the level of bottle and case deposits.

Advises Local Action

On the score of price, it is the frank hope of many leaders in the beverage industry that the wholesale cost of soft drinks can be raised to approximately 90c. per case without affecting the retail price level. But whether or not this hope can be realized remains to be proven. It will require concerted action on the part of the nearly 7,000 bottlers of soft drinks, along with the cooperation of millions of retail dealers.

It is my recommendation that all soft drink bottlers pool their resources and attempt to overcome present difficulties together. The problems, however, must be solved at the local level—that is to say, the bottlers in each area must combine their efforts in order to solve local problems.

American competition being what it is, however, it is extremely doubtful that a 100 percent unity of purpose can be established in any community. It will be a brave bottler, indeed, who strikes out on his own to secure higher prices and higher case deposits. The fight for existence, to say nothing of the fight for an honest profit, will attract nation wide attention.

No question—"Its tough at 5c.!"

Judging of Bread Porosity . . .

Flavors Improved, Sales Boosted Through Organoleptic Tests*

Taste-panel results declared more reliable and reproducible than those obtained in consumer tests . . . Vitamins contribute flavors, act as stabilizers

By L. C. CARTWRIGHT and ROBERT A. NANZ
of Foster D. Snell, Inc., New York City

PRIME factor in the development of a new food is flavor. For if a food is to win popularity and enjoy repeat sales, it must, above all, be desirable to the consumer's taste. In this highly competitive field, a food lacking in good flavor will be purchased only once.

Moreover, attention must be paid at all times to durability of the flavor, as well as to the food's appearance.

Granted, an enthusiastic biochemist may contend that a food's nutritional make-up is its most important selling point. But this enthusiasm is quickly countered by food executives responsible for new product research and development.

These executives point out that long experience demonstrates flavor definitely comes first—that good flavor and appearance make for the widest acceptance of a new product. Second consideration, marketwise, is shown to be the package—its convenience, appearance and utility. And nutritional composition of the food comes third.

Flavor Important

The study of what, precisely, constitutes good flavor encompasses a consideration of the psychological factors involved in the acceptance of the food as served. That organoleptic tests have a definite place alongside orthodox chemical tests is now widely recognized. This was the recent consensus of a food group in London[1]. A food can be evaluated scientifically by organoleptic means and thereby classified as to its consumer acceptance, on a definite, reproducible basis.

The organoleptic evaluation of a food includes a study of the factors of feel, texture, color, aroma, after-taste, and the stimulating factors of pungency and heat. The apparent intangibility of these factors can be negated and their determination made on a scientific basis.

Essential to the evaluation is the selection of the factors to be included in determining the score. Flavor-panel testing is based on a rating for each factor, and the weight given in the score must be determined by preliminary trial and adjustment. Scores obtained from preliminary panel testing should be analyzed and, if necessary, the factors discussed and changed before further scoring takes place. This scientific, statistical treatment puts organoleptic evaluation on a sound, indisputably scientific basis.

Panels can become quite expert in the evaluation of specific food com-

* From a paper presented at Symposium on Food Quality and Control in program of Division of Agricultural & Food Chemistry, American Chemical Society meeting, Chicago, Apr. 19, 1948.

. . . Gaging of Thiamine Odor, and Evaluation of Spice Tastes . . .

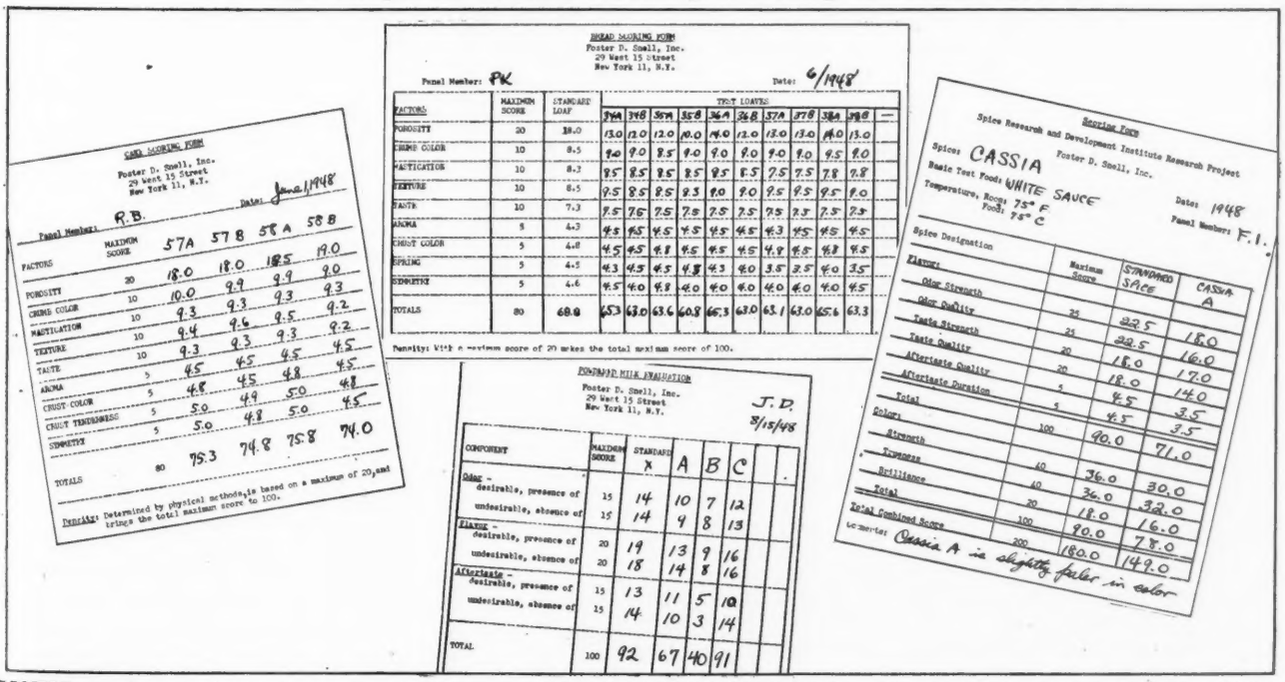
ponents. The removal of the factor of individual variation in judgment makes results from a panel test more dependable than those of an individual taster. The panel's results are reliable, since the scores have proved reproducible in repeated testing. This has been brought out by Moser and others[2], whose panels studied soybean oil flavor and developed marked ability to distinguish slight flavor differences in the oils.

We have done considerable work on the scoring of baked products, resulting in a trained panel able to judge these products accurately. Much of the testing is done to evaluate ingredient changes. The work may be based on changes produced by altering the emulsifying ingredients. Therefore, texture is stressed in this scoring, since flavor sensations can easily be altered by an undesirable texture. Freshness is also related to texture. And it is the opinion of the bread judging committee of the New York Section, American Assn. of Cereal Chemists, Ingels, and others[3], that freshness affects flavor more than any other single characteristic of bread. Emulsifying agents have been studied in our laboratories to check their values in promoting retention of freshness in bread through their anti-staling functions.

Cathcart[4] points out the importance in comparative bread testing of (1) a standard procedure, (2) a regular order of testing, and (3) use of a basic loaf as a standard. Variations will result if the different components are judged in variable order.

Evaluation of spices by means of

. . . Are Steps in Precise Scoring Leading to Better Foods



CAKE SCORING FORM
Foster D. Snell, Inc.
29 West 15 Street
New York 11, N.Y.

Panel Member: R.B. Date: June 1948

FACTORS	MAXIMUM SCORE	57A	57B	58A	58B
POROSITY	20	18.0	18.0	18.5	19.0
CRUMB COLOR	10	10.0	9.9	9.9	9.0
MASTICATION	10	9.3	9.3	9.3	9.3
TEXTURE	10	9.4	9.6	9.5	9.2
TASTE	10	9.3	9.3	9.3	9.2
AROMA	5	4.5	4.5	4.5	4.5
CRUST COLOR	5	4.8	4.5	4.8	4.5
CRUST TENDERNESS	5	5.0	4.9	5.0	4.8
SYMMETRY	5	5.0	4.8	5.0	4.5
TOTALS	80	75.3	74.8	75.8	74.0

Remarks: Determined by physical methods, is based on a maximum of 20, and brings the total maximum score to 100.

BREAD SCORING FORM
Foster D. Snell, Inc.
29 West 15 Street
New York 11, N.Y.

Panel Member: PK Date: 6/1948

FACTORS	MAXIMUM SCORE	STANDARD LOAF	TEST LOAVES									
			34A	34B	34A	35B	36A	36B	37A	37B	38A	38B
POROSITY	20	18.0	13.0	12.0	12.0	10.0	14.0	12.0	13.0	13.0	14.0	13.0
CRUMB COLOR	10	8.5	9.0	9.0	8.5	9.0	9.0	9.0	9.0	9.0	9.5	9.0
MASTICATION	10	8.3	9.5	8.5	8.5	8.5	9.5	8.5	7.5	7.5	7.8	7.8
TEXTURE	10	8.5	9.5	8.5	8.5	9.3	9.0	9.0	9.5	9.5	9.5	9.0
TASTE	10	7.3	7.5	7.6	7.5	7.8	7.5	7.5	7.5	7.5	7.5	7.5
AROMA	5	4.3	4.5	4.5	4.5	4.5	4.5	4.5	4.3	4.5	4.5	4.5
CRUST COLOR	5	4.8	4.5	4.5	4.8	4.5	4.5	4.5	4.8	4.8	4.8	4.5
SPRING	5	4.5	4.3	4.5	4.5	4.8	4.3	4.0	3.5	3.5	4.0	3.5
SYMMETRY	5	4.6	4.5	4.0	4.8	4.0	4.0	4.0	4.0	4.0	4.0	4.5
TOTALS	80	68.8	63.3	63.0	63.6	60.8	66.3	63.0	63.1	63.0	65.6	63.3

Remarks: With a maximum score of 20 makes the total maximum score of 100.

POWDERED MILK EVALUATION
Foster D. Snell, Inc.
29 West 15 Street
New York 11, N.Y.

J.D. 8/15/48

COMPONENT	MAXIMUM SCORE	STANDARD X	A	B	C		
Odor – desirable, presence of	15	14	10	7	12		
undesirable, absence of	15	14	9	8	13		
Flavor – desirable, presence of	20	19	13	9	16		
undesirable, absence of	20	18	14	8	16		
Aftertaste – desirable, presence of	15	13	11	5	10		
undesirable, absence of	15	14	10	3	14		
TOTAL	100	92	67	40	91		

Spice Research and Development Institute Research Project
Foster D. Snell, Inc.

Spice: CASSIA
Basic Test Foods: WHITE SAUCE
Temperature, Room: 75° F
Food: 74° C
Date: 1948
Panel Member: F.I.

Spice Designation	Maximum Score	STANDARD SAGE	CASSIA A
Flavor:			
Odor Strength	25	22.5	15.0
Odor Quality	25	22.5	16.0
Taste Strength	20	18.0	17.0
Taste Quality	20	18.0	14.0	
Aftertaste Quality	5	4.5	3.5
Aftertaste Duration	5	4.5	3.5
Total	100	90.0	71.0
Color:			
Strength	40	36.0	30.0
Tyrosene	40	36.0	32.0
Brilliance	20	18.0	16.0
Total	100	90.0	78.0
Total Combined Score	200	180.0	149.0

Remarks: Cassia A is slightly darker in color

SAMPLE panel score sheets show comprehensive appraisals of cake (left), bread and powdered milk (center), and a spice (right).

flavor and color scores has evolved some interesting new aspects of these seasonings in food formulation. After some adjustment, the following scoring system was established: Flavor is determined by judging odor-strength and odor-quality separately. Taste strength and quality are checked next. After-taste, an important characteristic of any seasoning, is judged last, and given a low score. Odor-strength and odor-quality have values of 25 each out of 100 (maximum score). Taste-strength and taste-quality are valued at 20 each, and after-taste strength and quality at 5 each.

The spice chosen by the panel as best in flavor acceptability was given a score of 90 percent of the maximum —in order to provide "leeway" for the scoring in the future of new samples, among which may be spices even more acceptable on the flavor count.

Color is scored according to strength, trueness and brilliance. Values assigned to each are 40, 40, and 20, respectively. Accordingly, the panel chose the best appearing sample, and on the color scale this spice received a similar "leeway" score of 90 percent.

Using this study as a basis, some interesting results have been obtained in comparative panel-testing of very old shelf-stored ground spices and fresh spices. Future reports will cover this work.

Taste and Chemical Composition

The flavor and the odor of specific chemicals have been studied widely. Zwaardemaker et al[5] have determined the odor ratings, using comparative measurements of various materials at standard or molar concentrations. The odor of chemical materials in foods is, of course, a component of flavor. In the food-chemical combination, the blend of odors may be pleasing only if the added taste and odor factors are properly balanced against those naturally present in the food.

Some objectionable flavors developed when synthetic essential oil substitutes were added to materials such as gelatin. The change in these synthetics during storage has often yielded undesirable flavors.

Druce[6] and Mee[7] have considered the molecular structure of chemicals having taste, and give relations between positioning of reactive groups and taste sensation. Much work is seen necessary before valid conclusions can be drawn regarding the relation between taste and chemical composition. Of the work done to date, least conclusive are the results of studies to determine threshold concentrations effective in producing taste. Much work has been done on the aromatic acetyls, acetylmethyl carbinol in bread[8], and diacetyl in butter.

Gaging Texture

The texture of foods—physical nature of the product and its condition after processing—has not been studied as widely by organoleptic tests as might have been expected. Sweetman[9] has set up a scale for the judging of cooked-meat texture. She has also studied physical measurements of rigidity of gels, viscosity of pastes, hardness of vegetables, plasticity of mashed vegetables, stiffness of whipped emulsions, tenderness of baked products, and crushability of materials like cottage cheese.

The various methods devised to check texture are ingenious. Here again, panel testing augments and corroborates the physical measurements. Texture in bread may be checked by compressimeter, also by panel scoring using finger-tip feel.

Jacobs[10] discusses methods of measuring texture of a variety of foods, using differing apparatus. Among devices employed were those for testing the tenderness of peas, toughness of cheese, viscosity of cream, gas holes in bread, and oil globules in emulsions. He emphasized the need for control measurements in setting up various sets of basic standards.

Volatile compounds such as essential oils and various aldehydes have been thoroughly investigated. Kenneth[11], Crocker[12], and Crocker and Platt[13] have conducted much work to determine specific criteria regarding volatile flavor factors. Crocker classified a large group of odoriferous substances according to their vapor-pressures at room temperature. These odors may be modified by the presence of another odor which acts to subdue them by chemical action.

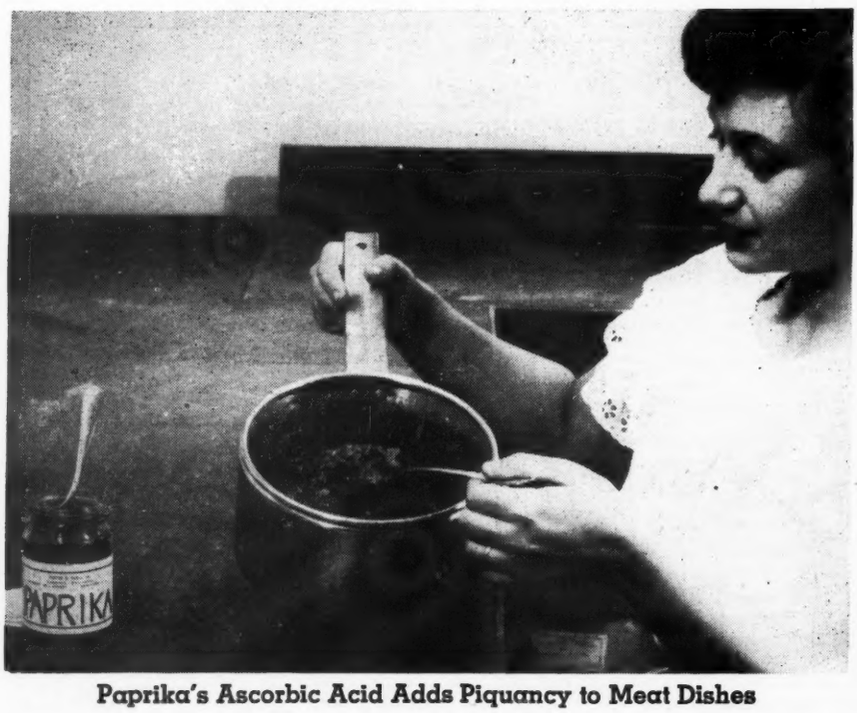
The production of aromatic materials by bacterial action is worthy of further study. They bid fair to result in many new pleasant foods other than the aromatic beverages and cheese products.

Ford[21] has studied the ability of the nose to discriminate. He presents pertinent data on individual differences in this ability.

King[14] presents a good review of the work necessary in the selection of a panel having ability to discriminate on the basis of small differences in composition. The study of taste thresholds is of prime importance, as is the analysis, by statistical means, of the results obtained by the panel. The literature contains many reports on the taste-threshold study of specific factors, such as salt, sugar, acid substances, bitter materials, and the flavor of aromatic substances.

Trout and Sharp[15] made studies of the physiology and psychology of these phenomena, finding that the amount of re-tasting necessary before arriving at a final decision depended upon the concentration of the substance, its range of concentration, and the number of samples within the series. Cameron,[16] who made similar studies, discovered threshold values useful in determination of the quality (though not of the quantity) of a taste sensation.

Fabian and Blum[17] dealt with the psychological aspect of taste and the relationship between potency and taste thresholds. They classified acids on the basis of their decreasing order of intensity of sourness. The same was done for sugars on the basis of their decreasing order of intensity for sweetness. Salt, they found, reduced the



Paprika's Ascorbic Acid Adds Piquancy to Meat Dishes

sourness of acids and increased the sweetness of sugars. Acids, on the other hand, increased the saltiness of salt, while sugars reduced the saltiness of salt and sourness of acids. Gamble[18] has also considered potency and taste thresholds.

With this type of pertinent material as reference background to panel testing technics, it is not difficult to prove that a panel can determine the potential food acceptance rating of a new food accurately, with more reliable and reproducible results than those obtained by consumer-preference tests.

Need for "Looking Panels"

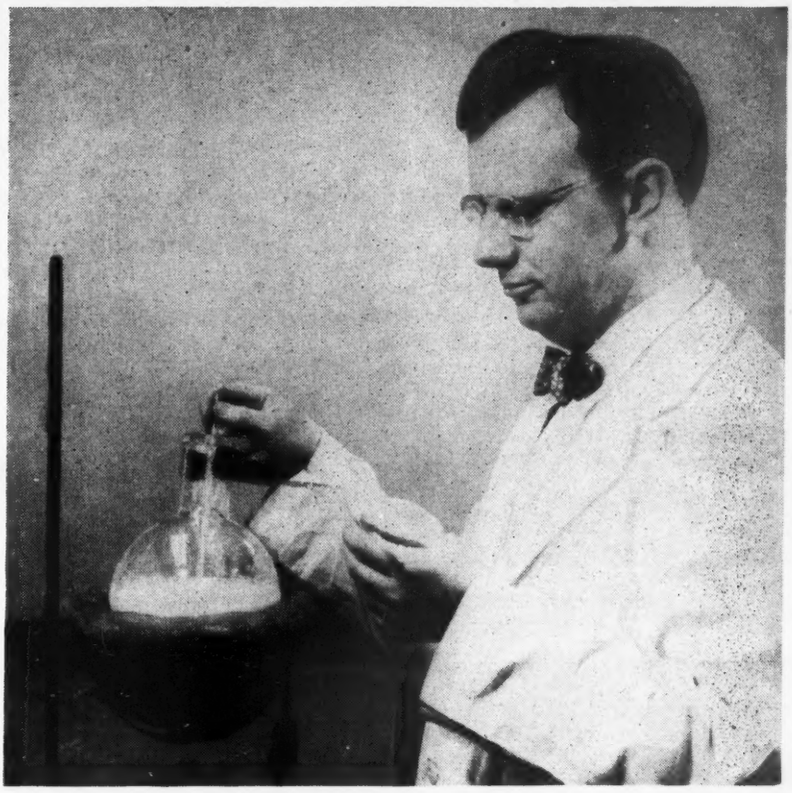
Color evaluation of foods has not been given thorough study. Color standards should be used, with food checked over six months to a year of shelf-life. Our own work has always included such color evaluations.

Further examination of foods should be made under fluorescent lights now in common use in eating places, since the foods take on a weird, unusual appearance under this illumination. Crist and Seaton[19] believe that "looking panels" as well as "tasting panels" are needed, because many people select foods by appearance.

Texture study deals with the physical nature of the food to the mouth "feel" or the mastication of a food. It is obvious that a food feeling greasy or unpleasant in the mouth will not be acceptable. A newly compounded food, for example, may not mix well with digestive juices in the mouth, thus preventing flavor from being released. The use of inert ingredients, such as carboxymethyl cellulose, may improve the texture of foods.

Pungency, a factor in food flavor that may add more pleasure to eating than any other factor, is noticed when a food first contacts the tongue. Stimulating to the salivary glands, it aids digestion and the acceptance of new foods, contributing to the pleasure of eating. Materials like capsicums and pepper produce an effect on the throat of a pleasant heat sensation and a stimulation not commonly felt in the typical American diet. The use of spice adjuncts, at proper subtle flavor levels, almost at sub-threshold-levels, will enhance many foods, giving them a flavor with a background. There are broad possibilities for the future development of many unusual and pleasant processed foods.

Sweetness may occur as a component of a food flavor when no actual sugar is present. Certain spices, contributing a small amount of sweet-tasting oils and starches, add a great deal of the sweet-taste sensation to a sugar-free food. Examples of these spices are cinnamon, cloves, mace and nutmeg.



"Basic Test Foods Have Been Developed—

in our laboratories, and they have proved of distinct value in testing flavor adjuncts. Sought for this purpose are foods which are bland, yet wholesome and bodying—foods having pleasant tastes by themselves. The threshold levels of sweetness, saltiness, and acidity were considered.

Formulas Given

▶ "One type is our *white sauce without oil* (seen in preparation in photo above). An excellent product resulted when we carefully adjusted the formula, bringing salt level to 0.49 percent, sugar to 0.41 percent, water to 92.0 percent, and flour to 7.0 percent. The fluidity of this sauce facilitated mixing with flavor adjuncts.

▶ "A second type is an *oil-white sauce*, with the following percentage composition: Wesson oil, 5.02; flour, 6.48; salt, 0.43; sugar, 0.36; emulsifying agent, 1.51; and water 86.40. This product proved smooth, stable, and flavorful.

▶ "And a third type is a *pumpkin mixture* useful in checking the flavor of spice materials. It has the following percentage composition: Canned pumpkin, 78.5; homogenized milk, 16.0; sugar, 5.0; and salt, 0.5.

"Before testing flavor adjuncts with these basic foods, our panel holds discussion periods to clarify the purpose of the test and to determine the weights to be given the several factors. These discussions serve to coordinate the approach."—*The Authors.*

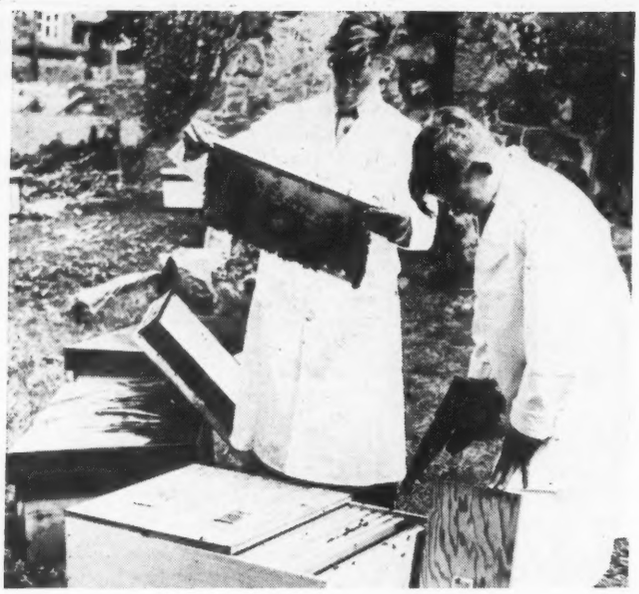
The glutamic taste is a type of saltiness and is related to the new flavor intensifier, monosodium glutamate. Used for years in the Orient, monosodium glutamate will be entering into much of the formulation here as new products are developed. Nair and others[20] have pointed out the ability of monosodium glutamate to intensify other flavors. It enhances and helps maintain flavor during storage.

In testing taste sensations quantitatively, a precise measurement of the relationship between the stimuli and the sensation has been evolved, known as the Weber-Fechner law. In studying this law, various concentrations of materials such as salt, in solution, were tested by Saidullah.[21] Taste sensations were recorded as the concentration varied from 0.4 to 18.0 percent. As the concentration increased, the taste passed through the following stages of sensation: Unpleasantness, indifference, pleasantness, indifference, unpleasantness. The temperature was constant and the differential threshold was about 1/7.

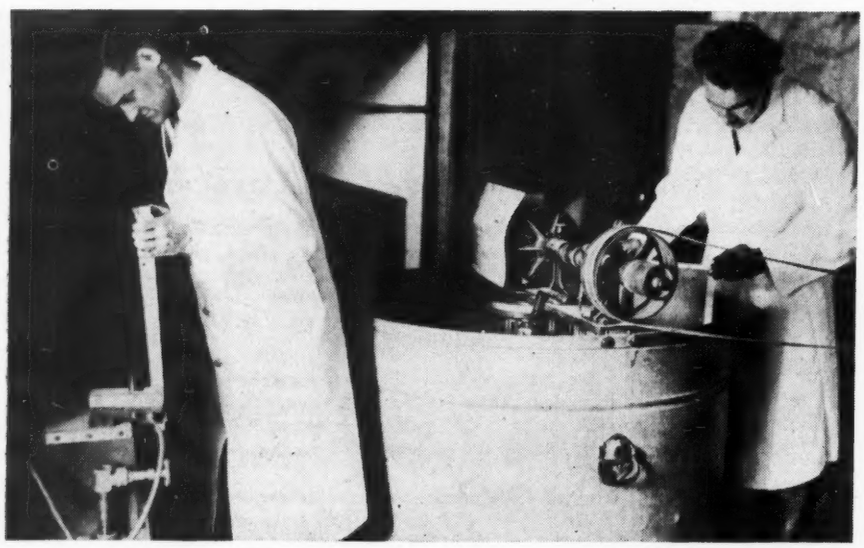
The law puts taste sensations in

(*Continued on page* 208)

Mead Industry Revived

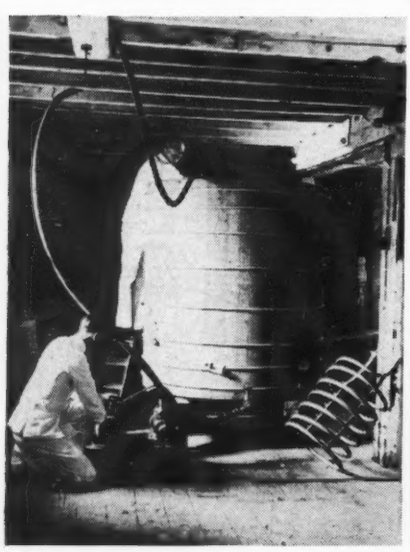


1. HONEY is produced at company's own apiaries in Cornwall. Canned honey from Australia is also used.



2. EXTRACTION of honey from the comb is done by a Roots extractor. The machine holds 45 honeycombs. From here honey falls to storage vats on the floor below.

3. CANNED HONEY, imported from Australia, is warmed before storage.



4. IN STORAGE, honey is kept warm by water flowing through coils.

5. PRIMARY FERMENTATION takes place in these oak vats with the use of special yeasts. Vat capacity, 324 gal., is kept small for highest quality mead.

WAS HONORED CRAFT IN MIDDLE AGES

The ancient art of making mead, not engaged in commercially since medieval times, has been resumed in England. Mead is a wine-like drink fermented from honey and water by the use of special yeasts. Mead liqueurs and brandies of higher alcoholic content also are being made.

By LT. COL. G. R. GAYRE, Chairman and Managing Director, Mead Makers Limited

AFTER A LAPSE of 500 years, the mead industry has been refounded in England, a country famous in ancient times for the quality of its mead. This new enterprise, Mead Makers Ltd., is located near the southwest tip of England, at Gulval, Cornwall, within twelve miles of Lands End.

Here, in the valley of the River Travaylor, came into existence some time ago an old mill with a water-driven wheel. With the years, the mill was enlarged, becoming what was for a country district a good sized building—about 40,000 sq. ft. with six floors.

These Cornish granite premises, restored and equipped, are now the Mead House. The old turbine has been torn out, as has the other derelict machinery. Power is bought from the local electricity company. Every machine, heater and fan is run from this supply —small motors being installed, whenever necessary, for honey heating, mead and honey pumping or herb grinding.

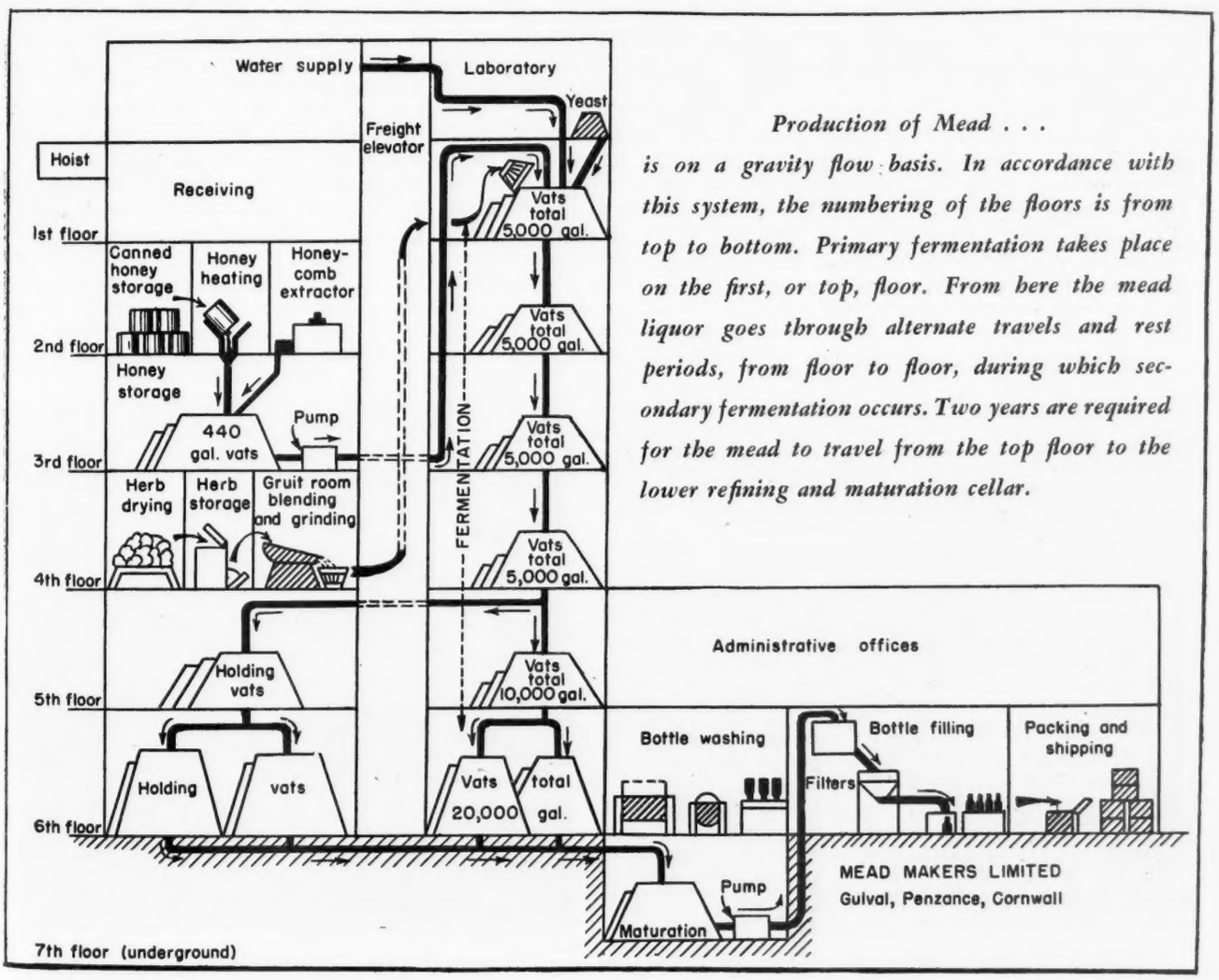
The granite walls and roof, the oak beams, joists and floors were retained. An air filtering system was installed, and the building is virtually fly-proof. In this quiet country atmosphere, free from noise, dust and dirt, the production of mead has begun.

The seven floors of the building, including the basement, are numbered from top to bottom, the top floor being the first floor. This system is in conformity with the production process, which is for the most part on a gravity-flow basis.

In the making of mead, the raw material is honey. The company maintains its own apiaries in Cornwall, but for the main part imports from Australia and buys from other English suppliers.

The canned imported honey and the native honeycombs are brought to the second (from the top) floor. In the honeycomb extracting room, a Roots extractor is used to draw the honey from the comb,. From the extractor, honey falls by gravity into wooden storage tanks on the third floor. Canned honey is taken to the second-floor heating room, where it is warmed by hot air. From there it falls by gravity into the storage vats on the floor below.

In these storage vats, the honey is kept warm with an "attemperator", a coil of tinned copper in which warm water circulates. As needed, it is pumped up to the fermentation vats on the



Production of Mead . . .

is on a gravity flow basis. In accordance with this system, the numbering of the floors is from top to bottom. Primary fermentation takes place on the first, or top, floor. From here the mead liquor goes through alternate travels and rest periods, from floor to floor, during which secondary fermentation occurs. Two years are required for the mead to travel from the top floor to the lower refining and maturation cellar.

first floor. Here it is diluted with water and receives its charge of yeast. Now begins the primary fermentation period, during which the main alcohol content of the liquor is built up.

When this is achieved, a series of rackings begins, during which the liquor is carried through a number of rest periods and on through the secondary fermentation. The liquor travels in this process from the first floor down to the seventh floor, or lower refining and maturation cellar.

Two years or more are required for these processes. The making of mead is not a rush business. During this time, the liquor has been resting in the oak vats on floors one to seven, or has been traveling from floor to floor in the racking operation.

From the lower cellar, the mead is pumped into a cold storage tank on the floor above. It is chilled, then passed through a gravity filter. The filter is not fine enough to denature the liquor. The mead is then passed on to the bottling department and subsequently to the shipping room.

The vats in which the mead spends the two-year period of fermentation are constructed entirely of oak. They are kept small in size to improve the quality of the liquor. On floors one down through four, the vat capacity is 324 gal. The largest vats, on the sixth floor, have capacities of 1,296 gal. The cleaning of these vessels is done by washing first with hot water, then with cold, cleansing with detergents, washing again, and finally, sulphuring before refilling with mead liquor.

The management believes in the prevention rather than the curing of troubles in fermentation. The all-important manufacture of special yeasts is done in the production laboratory, located on the first floor. Here, also, experimental work is carried on.

Only the finest and natural raw materials are used—no flavorings, essences or chemicals being added in the making of mead at Gulval. Honey varies, from the protein-rich heather

(*Continued on page* 210)

Puerto Rican Pineapples Take to "Hormones"

Discovery that cane-fire smoke stimulated plants leads to naphthalene-derivative spray which augments harvest

PRODUCTION of pineapples has taken a vigorous leap forward in Puerto Rico, with more than 1,000,000 crates realized from this year's crop. Moreover, 80 percent of the harvest was packed in local canneries, the balance being shipped as fresh at somewhat higher prices.

Of particular interest is the fact that an accidental discovery led to development of a "hormone"-containing spray which has played a notable part in speeding and increasing the harvest.

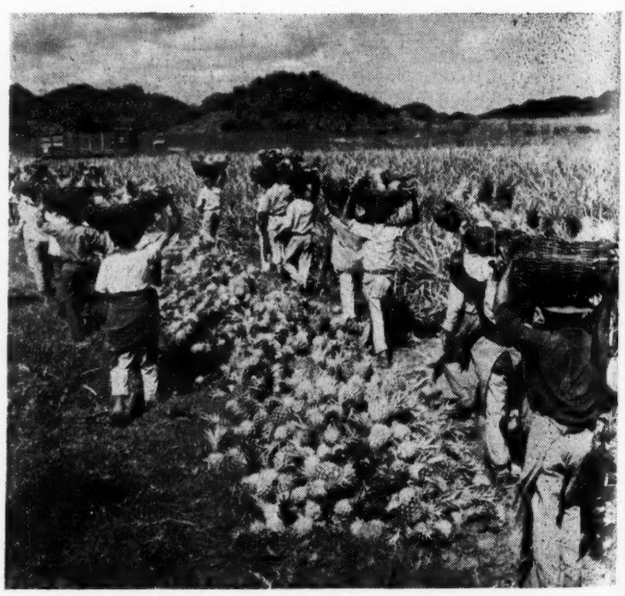
The story goes that a farmer noted that certain pineapples, in a field that each year was exposed to the smoke of nearby cane fires, always matured earlier than those in the other fields. Chemists found that the smoke contained ethylene, so they began to spray the plants with ethylene, and later tried acetylene. But because these materials were explosive, they ultimately switched to a naphthalene derivative.

This last—naphthalene acetic acid (alpha)—was cheaper and safer, requiring a concentration of only .005 percent to effectively accelerate flowering and growth.

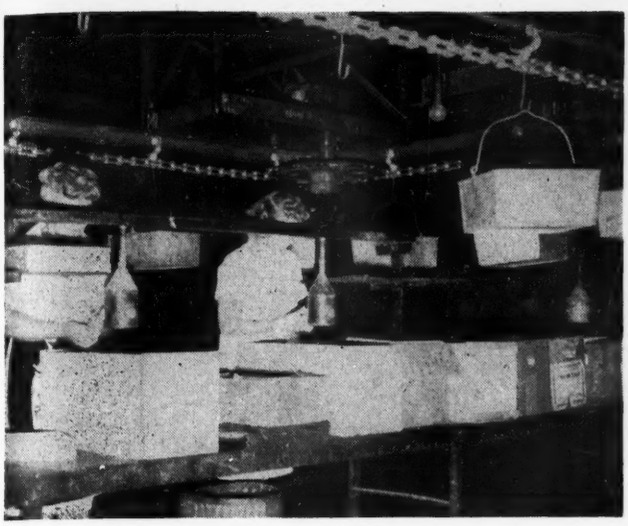
Three thousand acres were cut this year, bringing growers alone more than $2,000,000 from American markets. The crop is worth about $600 an acre, as against about $250 for cane, the island's main crop. Even with the new spray, however, the pineapple takes from 14 to 18 months to mature, and requires careful cultivation. It is, therefore, more nearly a year-round industry than is sugar, particularly since pineapple planting is carried on from June to February, providing a widely staggered harvest.

Spanish Red pineapple cultivation was introduced to the island shortly after the American occupation, 50 years ago. About 18 years ago a grower brought in some Hawaiian plants, but they failed to thrive. In 1945, a few of the surviving Hawaiian plants were set out on the Island of Vieques, off the east coast of Puerto Rico. With exceedingly careful cultivation, they now have 100 acres planted and expect eventually to increase to about 3,000 acres.

"Hormone" Spray Stimulates Plant Growth



Result: Earlier Maturity and Larger Crop



By Trolleying Eggs From Candling . . .

. . . Direct to Breaking

Conveyor "Ups" Egg-Meat Output

Elimination of floor-trucking saved labor, cut breakage. And clutter gave way to cleanliness, improving both product quality and worker relations

PRODUCTION has been upped one-third, floor space has been cleared for better sanitation, and less accidental breakage of eggs occurs since the recent installation of an overhead trolley conveyor system at a Philadelphia egg breaking company.

What's more, this firm—The Beacon Egg Co.—has found that the conveyor acts as a pacemaker to accelerate the tempo of the whole operation. It is estimated that this egg-moving equipment does the work of four men.

Since, in addition, the floor of the egg breaking room is practically cleared (except for the legs of the tables and the shell disposal cans), lighter and cleaner working conditions are now maintained. This has improved labor relations.

In normal operations, 44 girls now break 800 lb. of egg meat in an 8-hr. day, in contrast to about 600 lb. before the conveyor installation—a 33⅓ percent increase in output.

Effective Improvement

This specific conveyor system is noteworthy in its simplicity and effectiveness. The heart of the improvement is an overhead Link-Belt trolley conveyor running from the candling room into the egg breaking room. The conveyor makes a wide curve at the end of the breaking room, then completes its circuit by returning to the candling department. Girls who do the candling and breaking work at tables between parallel runs of the conveyor.

Motor-operated, the conveyor comprises 140 ft. of endless strand "Rivetless" chain suspended at intervals from trolleys operating slowly along the bottom flange of a steel I-beam track. A basket hook is located under each trolley.

Girls in the candling room place the tested eggs in rectangular metal baskets, which are then hung on suspension hooks of the revolving chain, to be carried into the main room. On arrival, these baskets of eggs are removed by the girls at the individual egg-breaking stations when a supply is required. No bottleneck is caused if a basket is not removed—it simply continues around the track.

Saves Floor Space

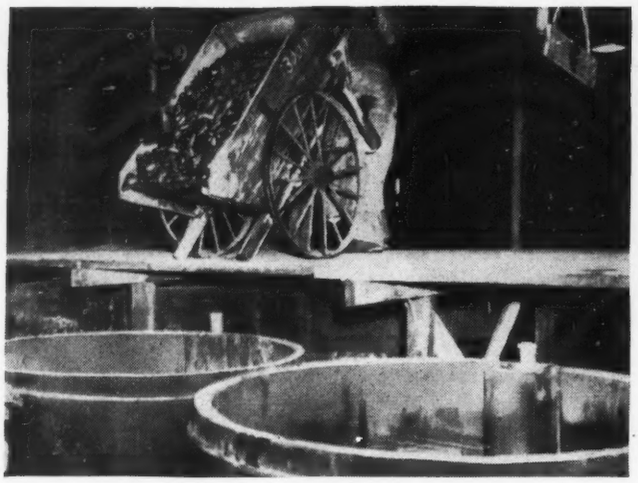
In the past, crates of eggs were trucked from the candling room and piled alongside the individual breaking tables. Important floor space was thus wasted, and breakage of eggs from rough handling was inevitable. The new system conserves valuable floor space for Beacon, which does a substantial business of preparing raw egg yolks, raw egg whites or raw mixed (whole) for sale to local bakeries and confectioners.

When the metal baskets are empty of eggs, the girls hang them back on a hook for returning to the candling room. In this manner a smooth flowing production line results. Initially, eggs are brought by the crate from storage to candling. And the meats, which are the products of the operation, are collected in stainless steel buckets, later picked up by an attendant, who takes them to the department where they are strained, churned (if desired), and frozen. It takes an average of 30 min. from the time the eggs hit the breaking bar until the meats reach the freezer.

The company also operates two other plants—one in Quincy, Ill., another in Mitchell, S. D. Beacon's owner, William Oldach, stresses the contribution the conveyor makes to plant cleanliness, which plays a prime part in maintaining the quality product desired by his customers.

This modern sanitary plant presents quite a contrasting picture to the procedures that existed at the turn of the century. The industry got its start at that time when a few enterprising operators figured there was a market for the dirty, cracked and leaky eggs that could be bought cheaply at the auctions or other points of sale.

In those days, the eggs were broken directly into cans for consumers in the immediate area. Today, using the best of eggs under the best conditions, egg meats frozen and fresh are produced for use all over the world. There are egg breaking and freezing facilities in practically every center where supplies of eggs are received for grading and distribution.



Pickles Go Direct to Small Process Tanks . . .

. . . Easily Moved by Electric Truck . . .

How a Small Pickle Plant

Replacement of stationary tanks with small portable types did

By JOSEPH E. FLURY, Chemist & Production Manager,
J. Weller Co., Oak Harbor, Ohio

IN PICKLE manufacturing, particularly the operations of smaller companies, cost cutting programs entail special difficulties. This is because there is double-trouble—that is, costly labor coupled with the continued necessity of numerous hand operations.

This hand work has long been the bane of the pickle maker. The very nature of his business makes it difficult for him to apply modern and automatic practices.

Nevertheless, careful study of the problems by J. Weller Co., Oak Harbor, Ohio, has demonstrated that improved methods of materials handling can be adopted—resulting in a considerable saving in labor costs, and with production boosted into the bargain.

Cumbersome Old Way

For years, in our plant, we had put the sorted brinestock (pickles in brine) into ten stationary, 12-bbl.-capacity tanks for processing. Since this procedure lasted about three days, we were able to use only three or four tanks each day. After that length of time, the pickles were transferred with dipnets into 45-gal. barrels, dill brine or vinegar was added, and the barrels were then let stand for later packing in glass or bulk.

New System

This meant an average production capacity of only 40 bbl. per day, and four men were needed to handle the dipping, processing, heading and brining. It was obvious that such a method with a container as small as 45 gal. entailed too much hand labor, was awkward and expensive.

We have now changed to an entirely new system in which we've standardized on the 5-bbl.-capacity tank with built-in pump (process) box. The new tanks are set on 4-ft. sq. platforms with 7-in. clearance. Initially, a hand lift truck was used to move them.

These tanks are placed beside an elevated platform from which the brinestock is added, then they are filled with water and moved away with a lift truck. Empty tanks are then moved in to take their place. At the proper time, the filled tanks are placed in the storage room and drained, after which vinegar or dill brine is added.

This makes a very flexible process in which any number of tanks can be filled or processed. We are no longer restricted to stationary tanks of a fixed 40-bbl.-production capacity.

In short, the old method required four steps—putting the brinestock into stationary processing tanks, next hand-dipping into smaller barrels, then heading these barrels for storage, and later opening them for packing. But now the two middle steps are eliminated, since the brinestock goes directly into portable processing tanks and remains there throughout.

Labor Saving

At first, using the hand truck, two or three men were required to push a new tank into place, since the total weight is over 3,000 lb. Later, an electric lift truck was purchased which transports a full tank much more easily, and which can be handled by one man with a minimum of fatigue. In this way, the work of three men was eliminated, with the following improvement in the expense picture.

Three men formerly needed to dip pickles etc., @ $2000 each for most of year's work.....	$6000
Depreciation on electric truck (dep. over 5 yr.)	220

"Place" Winner

FOOD INDUSTRIES presents herewith the practical feature which won for Manager Flury the second award, of $75, in this magazine's recent prize article contest.

Sought were helpful plant stories telling how specific food plants reduced operating costs by applying modern methods.

The article which took the first prize of $100 was published in our September issue.

. . . And Readily Stored . . .

. . . Eliminating Dip-Netting and Other Labor

Cut Handling, Labor Costs

away with former middle operations and stepped up production

On 81 tanks (dep. over 15 yr.)	200
On 81 platforms (dep. over 10 yr.)	80
Total depreciation	500
Annual net savings ($6000 minus $500)	$5500

There is also a considerable saving in the upkeep of the barrels, figuring the original cost and the cooper's time to fit new hoops, every month or so, to 400 barrels—this number being needed in the former operation when brine-stock was moved from the old large tanks to such containers.

Low Operating Cost

It might be said that the only cost on the electric truck is for the electricity operating the generator to charge the battery every 48 hr. The truck is of the hand-guided type, and it is ideal for use in small pickle factories where there are restrictions of space. It is also comparatively easier to manipulate than the larger and heavier type upon which the operator rides.

The small tanks are much more flexible to handle and to use than the barrels which had been employed for storage and brining. The need for labor to transfer from one operation to another is also eliminated. And these tanks on lift platforms increase production considerably over the stationary type. When used for processing, the only limitation as to volume is the number of tanks.

On lift platforms, the finished pickles can be readily moved to other stations for sweetening, or taken directly to a packing department, where they are put up for shipment.

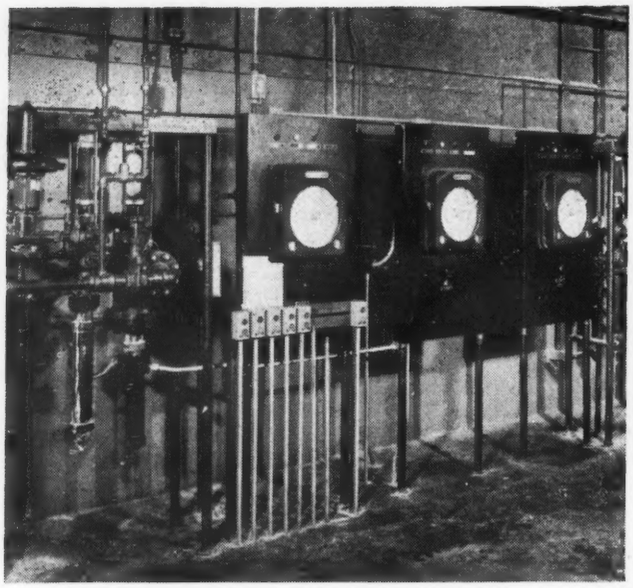
Formerly, the brining process required movement of the barrels to a central location, where the bilge bung was taken out, the barrel filled, bung put back in, and the barrel moved to storage.

One-Man Operation

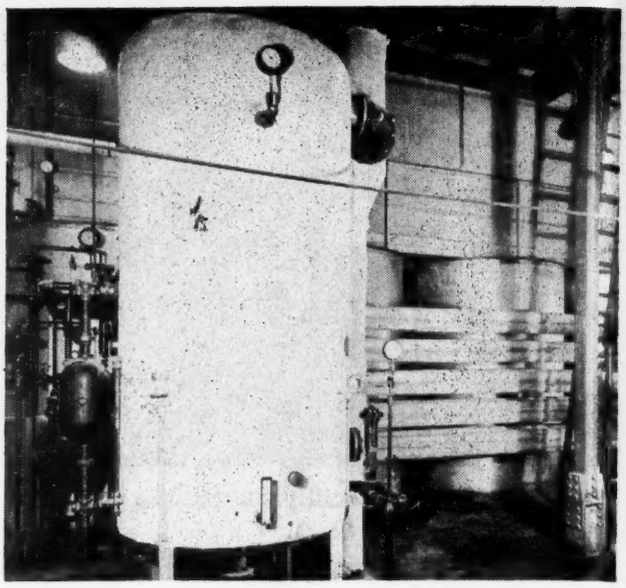
But now, after the processing, the tanks are placed in storage room, where the brine is run on the pickles through a hose, thus filling the tanks with a minimum of effort. And this gives the operator time to accomplish some other job. A pump installed between the supply tank and the discharge hose facilitates the filling.

As the job is now performed, one man is handling the entire operation of the process department, which formerly required four men. He can efficiently move tanks in and out of the various stations, change water in the tanks, process and add water, and also make up the various brines. And all this is done in a more efficient and orderly manner, and with great savings in costs.

Tanks Incorporate Process Boxes



A. **RATIO CONTROLLERS proportion delivery of soda ash for neutralization and rehydration, and caustic for re-refining.**



B. **CRUDE OIL is preheated, then oil-ash-soapstock mixture goes to heaters (background) and dehydrater (foreground).**

Higher Yields of Better Oils

Part II—Newer soda ash process is in many ways simpler to control

First installment of this two-part article (October FOOD INDUSTRIES) *told how the continuous caustic soda process had been developed to overcome many disadvantages of the batch method of refining crude edible fats and oils. The accompanying article now considers the refining technics of the continuous soda ash process, describing the problems that had to be solved before this newer method could be employed commercially.* —*The Editors.*

BY L. D. TYLER, The Sharples Corp., Philadelphia

SAPONIFICATION of some of the neutral oil is the principal reason why losses occur during the refining of fats and vegetable oils when caustic soda is used as the neutralizing agent.

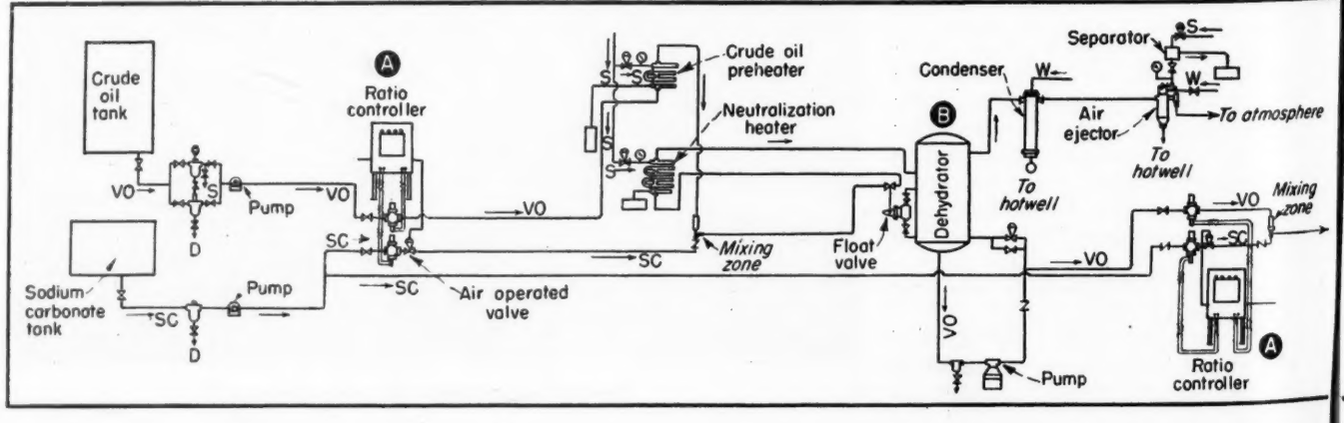
If a non-saponifying alkali like soda ash were to be used in place of caustic soda, neutral oil would not be saponified, and as a result the amount of refined oil recovered would be increased materially.

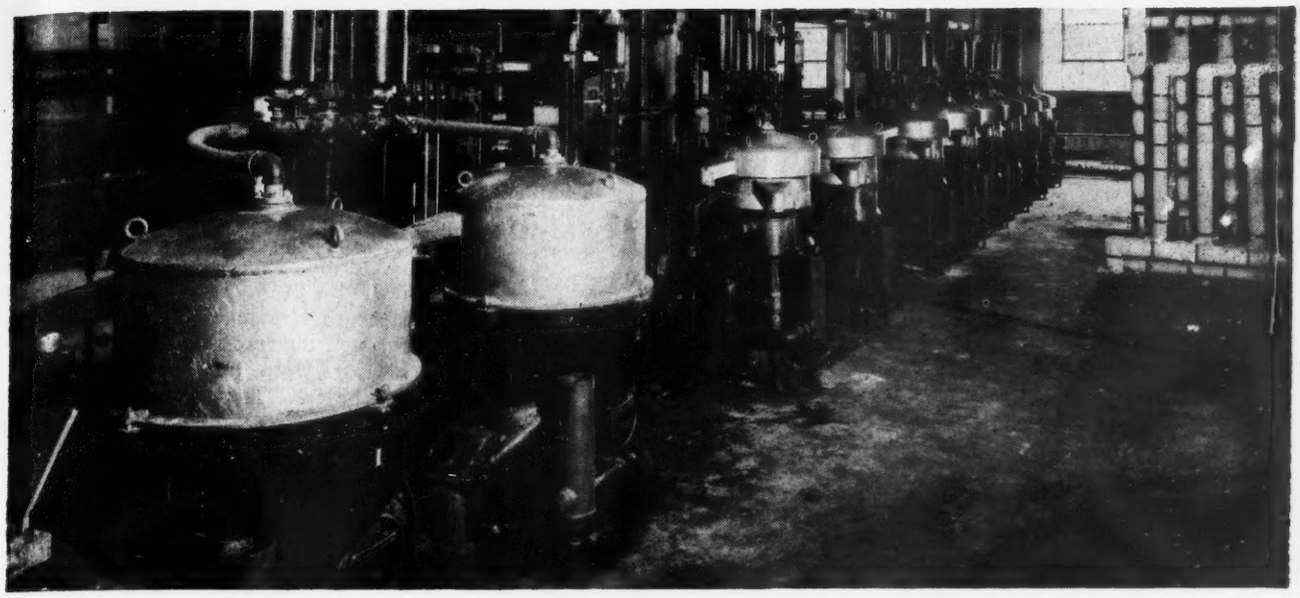
In actual practice, however, several problems were encountered before the non-caustic neutralizing reagent, soda ash, could be used.

First, soda ash is an ineffective color reducing agent. And second, certain difficulties arose whenever soda ash was used in equipment designed for the continuous caustic soda process. These were some of the difficulties: Incomplete neutralization of the free fatty acids in the oils; severe foaming with occluded CO_2, preventing neutralization from proceeding; and formation of a porous and high-volume soapstock which precipitates slowly and also occludes a large amount of oil.

However, such difficulties were finally resolved through the development of the Clayton continuous sodium carbonate (soda ash) process for centrifugal refining of fats and oils. Essentially, this process involves the following basic steps, which obviated problems encountered in the use of sodium carbonate as the non-saponifying neutralizing reagent:

1. Free fatty acids are continuously





C. **HIGH-SPEED CENTRIFUGES are used in three operations: First, they separate soapstock from neutralized oil. Second, they separate caustic soda containing coloring matter from re-refined oil. And third, they remove wash water from washed oil.**

By Continuous Alkali Refining

and it handles more varieties of vegetable oils than caustic soda method

neutralized and the phosphatides and gums are precipiated with soda ash solution as the non-saponifying reagent.

2. The mixture of crude oil, soda ash and soapstock is dehydrated under vacuum to remove CO_2 evolved in the neutralization reaction and to produce a hard, dry soapstock, free from emulsions formed in the initial mixture.

3. Oil and soapstock mixture is rehydrated continuously with soda ash solution to provide a soapstock sufficiently fluid to discharge properly from the refining centrifuges.

4. Relatively oil-free soapstock is continuously separated from the neutral oil in high-speed centrifuges.

5. Neutralized oil is continuously washed with caustic soda solution to reduce the color of the oil, with practically no resultant losses due to saponification taking place in the absence of soap.

6. Caustic wash solution, containing coloring matter, is separated from the oil in high-speed centrifuges.

7. Residual soap is continuously washed with water, and the wash water is separated from the oil by centrifuges.

8. Residual moisture is evaporated from the washed oil by vacuum-drying.

Neutralization With Soda Ash

In the continuous sodium carbonate system, crude vegetable oil is pumped from storage or tank cars into feed tanks equipped with agitators. From feed tanks, oil is pumped through the oil rotameter of a neutralization ratio controller and through a heat exchanger, where the temperature is raised to 140–160 deg. F. by low pressure steam. The oil then flows to a pipe line mixer (mixing zone), where soda ash treat is introduced.

Soda ash solution for neutralization and rehydration is made up in mixing tanks, usually to a strength of 20 deg. Be. (15.2 percent Na_2CO_3), and is pumped to the system. The neutralizing solution flows through the reagent rotameter of the neutralization ratio controller and into the mixing zone. Here it is mixed with the preheated crude oil.

The ratio controller delivers an adjustable percentage of soda ash to the mixing zone in proportion to the crude oil flow, through automatic positioning of an air-operated valve in the reagent line. The controller is set at the beginning of the run to give the desired reagent treat in accordance with the free fatty acid content of the crude oil. Adjustments may be made at any time during operation.

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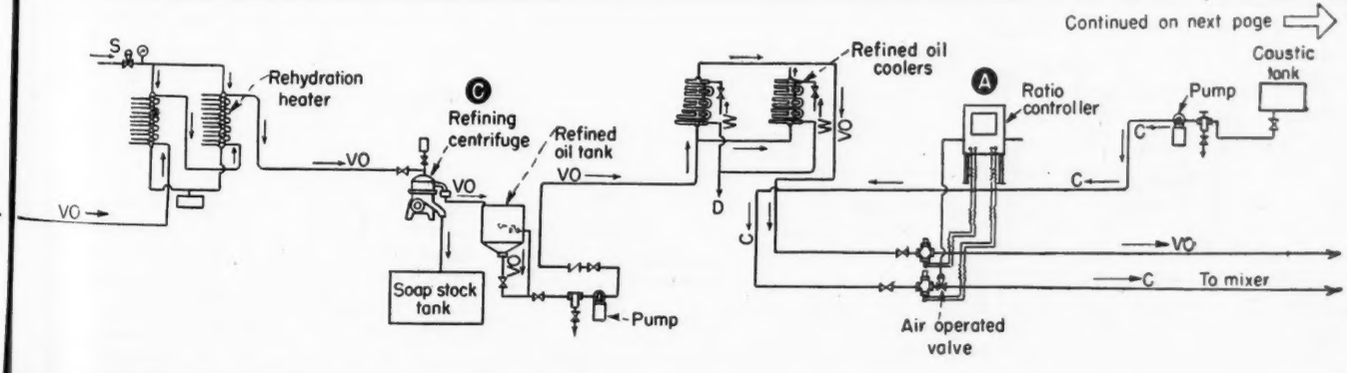
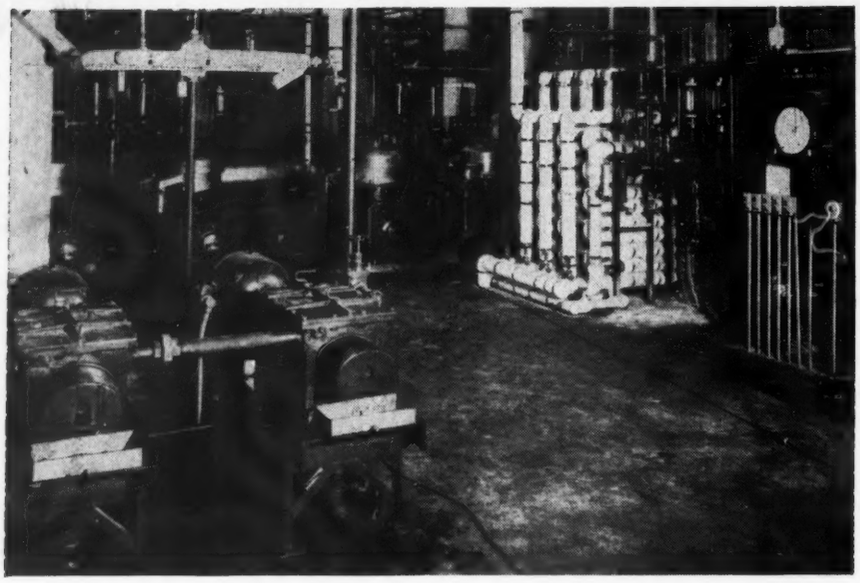




D. MIXERS (foreground) combine cooled oil with caustic soda solution so that the desired color reduction can be obtained while the oil is being re-refined.

The mixture of crude oil, soda ash and soapstock leaves the mixing zone and enters a second heat exchanger, where it is heated to 200–212 deg. F. by low pressure steam. Rate of flow to the heater is regulated by a float level controller in the dehydrator chamber. The heater, under partial vacuum, permits most of the water and CO_2 to be vaporized.

Next, the mixture enters the dehydrator chamber, which is maintained under 27–28 in. of vacuum by a steam ejector. The water vapor and CO_2 are drawn out the vapor line through a barometric condenser and the steam ejector. And the dry oil-soapstock mixture (at about 160 deg. F.), freed from CO_2, drops to the bottom of the chamber, from which it is pumped.

The oil-soapstock mixture is continously pumped from the dehydrator and flows through the oil rotameter of a rehydration ratio controller and then into a mixing zone. A proportional amount of soda ash solution, sufficient to give the proper fluidity to the soapstock at the refining centrifuges, is metered through the reagent rotameter and air-operated valve of the rehydration ratio controller. It then mixes with the dry oil-soapstock mixture in the mixing zone. The amount of rehydration treat required depends upon the gum and free fatty acid content of the oil, and normally varies from 2 to 7 percent.

Refining Centrifugal Separation

The rehydrated oil-soapstock mixture flows into a heat exchanger, where it is heated to 195–205 deg. F. by low pressure steam. Here, also, time is allowed for the soapstock to become thoroughly wetted. The mixture then flows to high-speed disk bowl (tubular) type centrifuges, where soapstock is continuously separated from the oil. Oil is discharged from the centrifuges into a receiving tank. And soapstock drops by gravity into a tank, from which it is pumped to storage or acidulation equipment.

The refined oil from the centrifuges is neutral and essentially free of gums and phosphatides. However, in the case of many oils the color is not satisfactory. To achieve further reduction in color, it is necessary to re-refine the oil with a caustic soda wash.

The refined oil is pumped from the receiving tank through a cooler, where the temperature is reduced to 80–90 deg. F. The cooled oil flows through the oil rotameter of a re-refining ratio controller, and then to a high-speed mechanical mixer designed to give intimate contact between the oil and reagent.

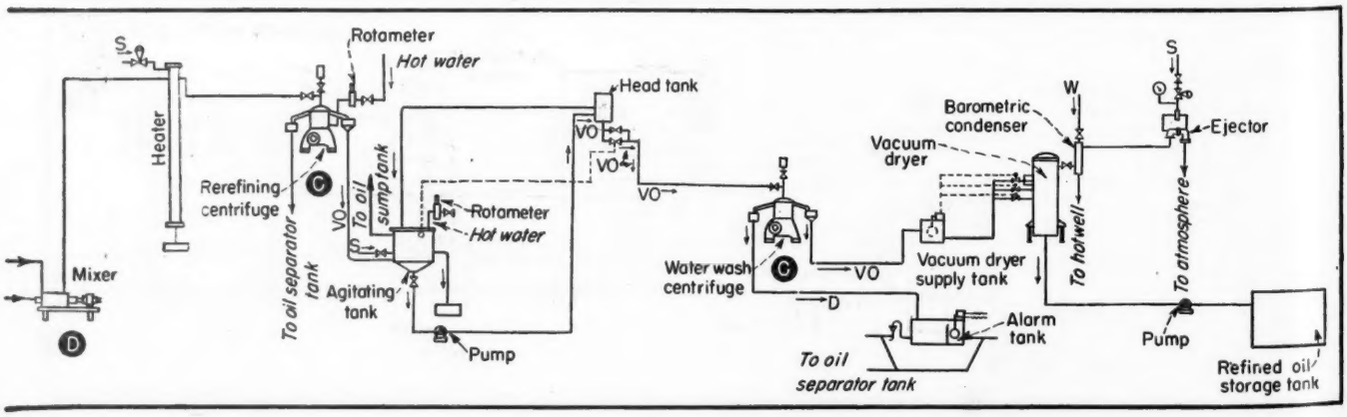
Re-Refining With Caustic Soda

Caustic soda solution, usually 20 deg. Be. (14.4 percent NaOH) in strength, is pumped from mixing tanks through the reagent rotameter and air-operated valve of the re-refining ratio controller. The alkali solution is metered to the mixer and it is then mixed with the cooled oil. The percentage of caustic treat varies with the degree of color reduction required, normally ranging from 1 to 3 percent.

The oil-caustic mixture flows from the mixer through a heat exchanger, where low pressure steam raises the temperature of the mixture to 140-160 deg. F. Caustic wash water containing coloring matter is then separated from the oil continuously in high-speed, disk-type centrifuges. A stream of hot water is introduced into the bowl of each re-refining centrifuge to facilitate separation. The caustic wash water is usually discarded, since it contains only traces of neutral oil. Losses due to saponification are extremely small, since this reaction does not occur to any extent in the absence of soap.

Traces of residual soap are removed from the re-refined oil, by washing the oil with hot water and vacuum-drying it in the same manner as in the continuous caustic soda process. The oil runs into a receiving tank, where steam coils keep the oil at 160-180 deg. F. Then 10 to 20 percent hot water is continuously added.

The mixture is agitated by circulating the "wet" oil from the bottom of the wash tank through an elevated head tank by means of a pump. A portion of the circulating mixture is continuously fed through a float valve to water-washing tubular or disk-type centrifuges. The soapy wash water is separated from the oil in the centrifuges and discharged to the sewer. The washed oil, containing about 0.5 per-



cent moisture, flows to a vacuum drier supply tank.

From the supply tank, the wet oil is sucked into the evacuated chamber of the vacuum drier through spray nozzles. The drier is maintained under a reduced pressure of 1 to 2 in. of mercury by means of a steam eductor and barometric condenser. And the water in the oil is flashed off and leaves through the vacuum system. The feed to the drier is regulated by solenoid valves operated by a float switch in the supply tank. "Dry" oil containing less than 0.05 percent moisture is withdrawn continuously from the drier chamber, then pumped to storage tanks or further processing.

Selection of Reagent Treats

On most oils, the amount and strength of the neutralization treat in the continuous sodium carbonate refining process is governed by the free fatty acid content of the crude oil alone. A strength of 20 deg. Be. (15.2 percent Na_2CO_3) is used in nearly all cases, and for most oils a treat equivalent to 1½ times the amount required to neutralize the free fatty acids gives excellent results.

The rehydration treat is controlled by the consistency of the soapstock discharged from the refining centrifuges. Only a minimum amount of skill is required to adjust the treat so that the soapstock can be discharged satisfactorily.

For color reduction, 20 deg. Be. caustic soda solution (14.4 percent NaOH) gives satisfactory results for most oils. Occasionally it is possible to use lower strengths for light-colored oils. And, in some cases, the re-refining step may be by-passed entirely.

The amount of caustic treat required depends upon the final color desired. It is determined by making color determinations on finished oil.

Refining Losses Reduced

Losses of neutral oil incurred in refining fats and oils by the continuous sodium carbonate (soda ash) process are materially less than those encountered in the continuous caustic soda process, and are decreased 40 to 50 percent in comparison with losses in batch refining or in laboratory refining tests. On the other hand, the caustic soda process results in only a 20-30 percent reduction on the same basis.

For example, crude cottonseed oil containing one percent free fatty acid, which showed a loss of 6.0 percent on batch refining or laboratory refining tests, may have a loss of 4.5 percent when refined by the caustic soda process, or a saving of 25 percent.

The same oil refined by the sodium carbonate process may have a loss of only 3.3 percent, or a saving of 45 percent. The net decrease in loss, as compared with the caustic soda process in this instance, is 1.2 percent of the crude oil refined by the sodium carbonate process. This is a 720-lb. increase in the yield of refined oil per tank car (60,000 lb.) of crude oil.

An average net decrease in loss of ¾—1½ percent or more can be expected when refining an average variety of oils by the sodium carbonate process as compared with the caustic soda process. This decrease will vary with the gum and free fatty acid content of the oils handled. The margin represents the savings realized in the usual run of domestic oils.

Losses experienced in refining by the sodium carbonate process closely approach the theoretical non-oil content of the crude oil, as determined by the Wesson test. On oils of exceptional quality, the refining loss may be only 0.2 percent higher than the Wesson loss. Average quality crude oils will refine with losses of 0.4 to 0.5 percent over the Wesson loss, while very poor oils may have losses of 0.5 to 1.0 percent higher than the Wesson test.

The table accompanying this article summarizes the refining losses obtained in a series of tests made on the continuous sodium carbonate process, as compared with the laboratory refining data, which is a close approximation of batch refining performance. By assuming a liberal loss-saving, an estimated caustic soda refining loss was also calculated to illustrate the net decrease in loss which might be expected with the sodium carbonate process as compared with the caustic soda process.

SODA ASH PROCESS VS. CAUSTIC SODA AND BATCH METHODS

Type of Oil	Average FFA of Crude Oil (Percent)	Average Refining Loss (Percent)		Refining Loss Saving By Continuous Soda Ash Process (Percent)	Estimated Continuous Caustic Refining Loss (Percent)**	Estimated Net Saving of Soda Ash Over Caustic Process (Percent)
		Continuous Soda Ash	Laboratory*			
Hydraulic cottonseed	3.1	7.4	12.6	41.2	8.8	1.4
Corn	2.7	5.5	10.5	47.6	7.4	1.9
Expeller and extracted soya bean	0.6	3.1	5.6	44.7	3.9	0.9

* Approximates batch refining performance.
** Since no comparative refinings were made between soda ash and caustic soda processes, estimated caustic refining losses were calculated by assuming a 30 percent refining loss saving over laboratory refining loss.

High Quality Oil

Judged on average quality, oils refined by the continuous sodium carbonate process are equivalent to those refined by the batch and caustic soda methods. Maximum color reductions can be secured by the soda ash process in the re-refining step without affecting refining losses or the quality of the refined oils. The residual free fatty acid in the refined oil runs consistently less than 0.05 percent.

Normally, only one water-washing step is required to produce oils of residual soap content equivalent to that obtained by the caustic soda process using two water-washing steps.

Better control over emulsion formation in the oil-soapstock mixture is possible, because the removal of water in the dehydration step breaks previously formed emulsions, and the emulsifying conditions in the rehydration step are closely regulated. This decreases the occlusion of oil through emulsion formation, with consequent lower losses of oil in the soapstock.

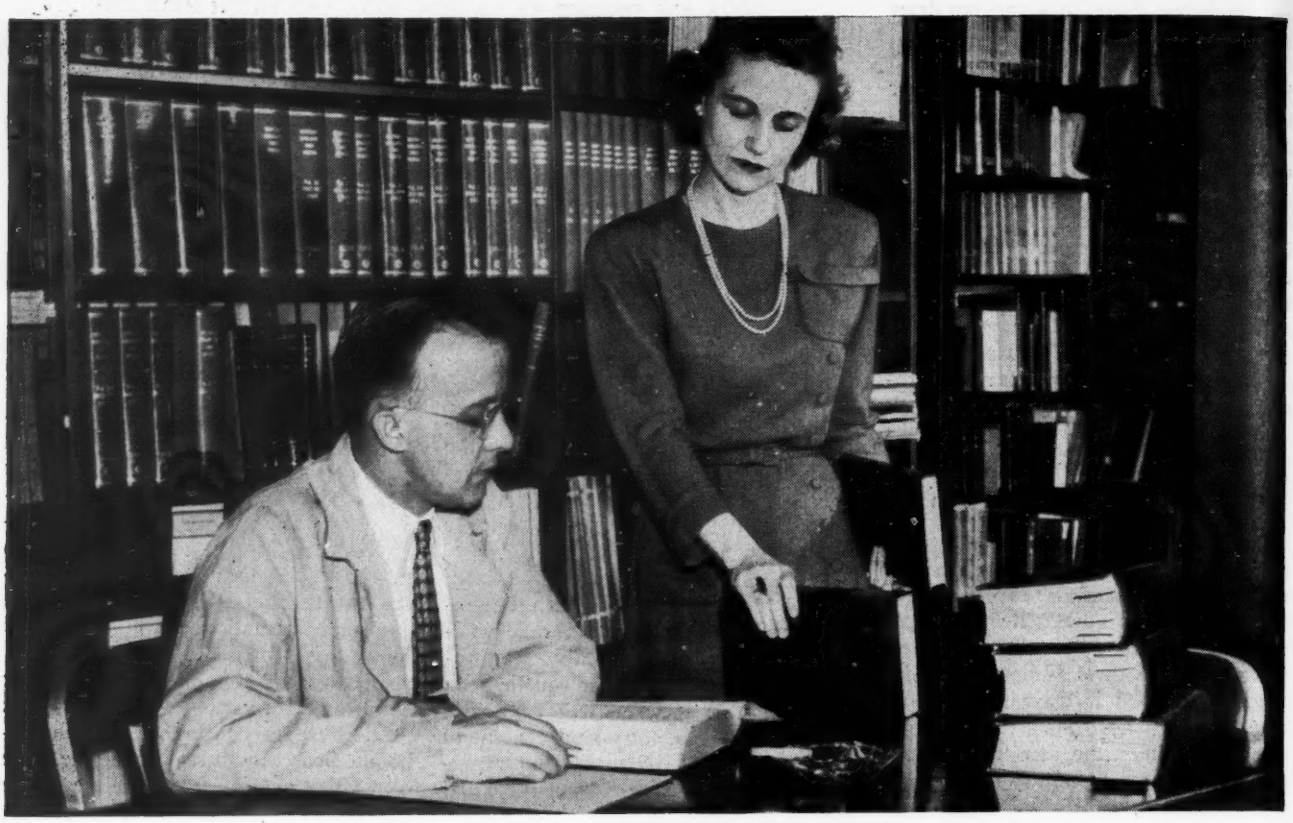
Because of the close control over emulsion formation and soapstock properties, the continuous sodium carbonate process will readily handle those oils which are difficult to refine in the caustic soda process, such as solvent extracted and degummed soya bean oil. Moreover, a few oils which cannot be refined at all in continuous caustic soda equipment—such as cocoanut and palm kernel—can be refined with the sodium carbonate process.

Operation is Easy

In spite of the greater complexity of the sodium carbonate process, control is in many respects simpler than with the caustic soda process. The refining losses and the quality of the finished oil are considerably less sensitive to changes in reagent strengths and treats than in the caustic soda process. And much of the need for "art" in refining fats and oils is thereby eliminated.

Simplicity may be attributed, in part, to the independent control of the variables responsible for excess neutralization, emulsion formation, soapstock consistency, and color reduction—as differentiated from the combined operation of the caustic soda process. One man can handle the process with a minimum amount of experience.

All oils which can be refined by the continuous caustic soda process can be handled successfully in the continuous sodium carbonate process. These include cottonseed, corn, palm, peanut, soya bean, sesame, sunflower seed, linseed, kapok, perilla, rapeseed, hempseed, wheatseed, raisin seed, and walnut oils as well as tallow and hog fat. In addition, cocoanut and palm kernel oils can be successfully refined—for the first time—by continuous methods with the sodium carbonate process.



Fact-Finding Here . . .

In General Foods' Central Research Library, Company Chemist Norman Ishler jots down pertinent data regarding non-enzymatic browning. Meantime, Librarian Sophia Polovina, author of this article, locates additional works on subject, brings them to desk.

Plant Research Library

Prime roles played by its many services in implementing progress

By SOPHIA POLOVINA, Librarian,
Central Research Library, General Foods Corp., Hoboken, N. J.

In food industry technical efforts, the plant research library plays a most important part—both in implementing and in expediting the research program. For top management these facilities save money, and for research staffs they save time, the amount of these two savings being dependent upon the efficiency with which the library is set up and operated.

Our purpose here is to tell how the research library can do its most efficient job, and how the research organization can make the most effective use of these facilities.

Boon to Research Man

The fact is that the average research man spends at least one-third of his time reading scientific and technical literature. And pressure of his laboratory work often means he must do a great deal of reading after hours at home. But a considerable amount of this time and energy can be conserved through the convenience of a good plant research library and through the cooperation of its staff.

The value of a library to a research organization is exemplified by the General Food Corp. Central Research Laboratories' Library at Hoboken, N. J. This library contains about 8,000 volumes; 30,000 pamphlets, documents and reprints; and 20,000 patents on all phases of the food industry, including data on theoretical and applied chemistry, physics, medicine, nutrition, biology, agriculture and related fields.

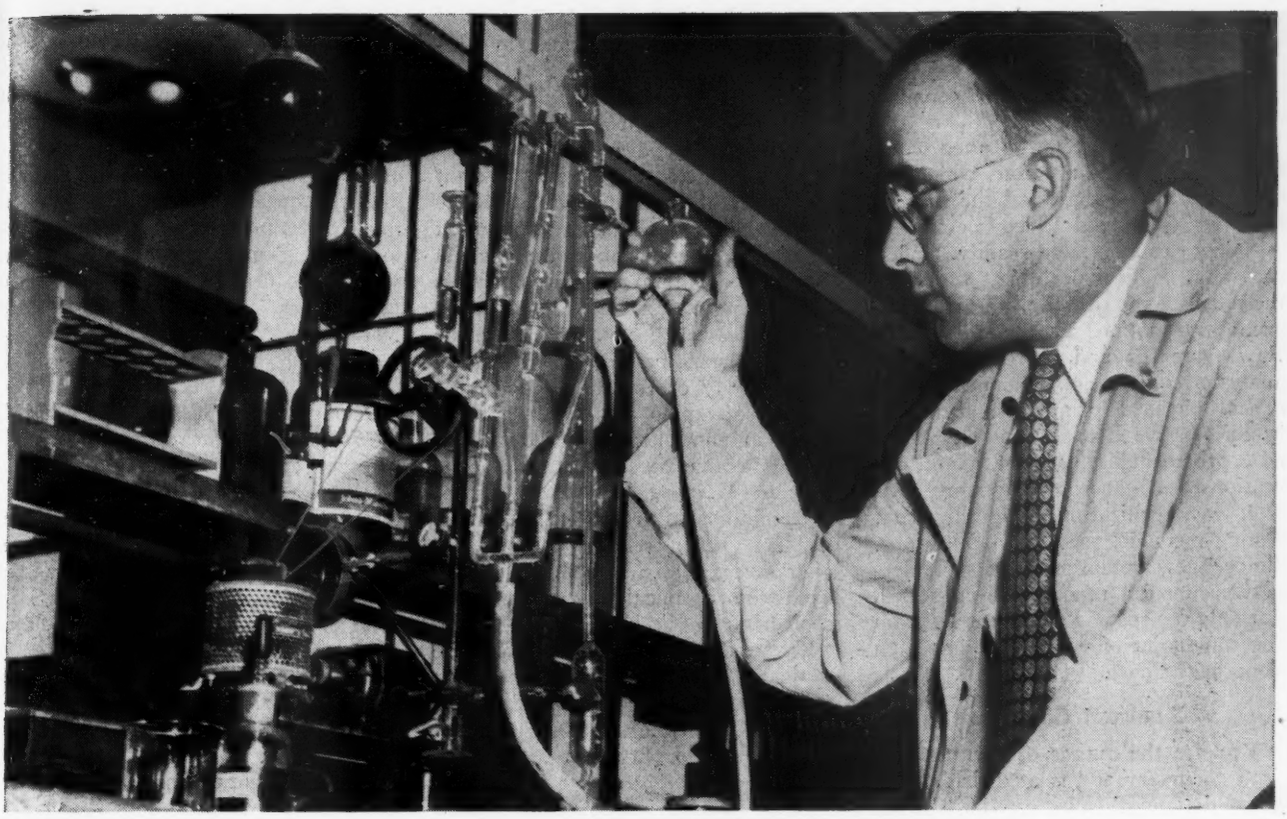
The library directly serves the research staff of Central Laboratories and, in addition, 15 other research and control laboratories maintained by GFC subsidiaries and divisions.

Research activities center on a great variety of products—such as coffee, cacao, grains, coconut, pectin, flour, gelatin, citrus products, cereals, baking powder, salt, desserts, frozen, canned and dehydrated foods, sea foods, feeds, and baked goods. These activities are not static; they constantly vary with new interests and developments.

Physical Layout

To make any collection of books readily accessible, an efficient physical arrangement is necessary. A prime requisite is to centralize the collection in relation to all research divisions. Location of a company library in "available" basement space alongside the machine shop would be indicative of poor planning.

Since the General Foods library serves about 250 laboratory men and indirectly other divisions of the company, and since that service is extensive, the library now has a staff of eight, four of whom are professionally trained in a background of chemistry or library science or both.



. . . Saves Time, Money Here

Back at laboratory with his special data, Chemist Ishler now starts a new series of tests, employing Van Slyke amino nitrogen apparatus in his non-enzymatic browning investigation. Mr. Ishler is chief of General Food Corp.'s Analytical Chemistry Laboratory at Hoboken, N.J.

Speeds Technical Efforts

are exemplified by key contributions of General Foods' reference facility

It is to be emphasized, however, that the value of any library is not gaged merely by its size or its physical set-up. A library containing but 500 volumes can competently serve the personnel if its librarian is constantly alert and resourceful.

Ordering and Circulation

Before tangible services—such as abstracting, and preparation of literature searches and bibliographies—can be offered to a research organization, an efficient routine system for purchase and circulation of library material must be established. Since needs are specialized, quite often the library is its own purchasing agent. It may also cooperate with other libraries in securing, borrowing, and lending research literature. By means of inter-library loan, and photostats or microfilms of literature, a specialized library can bring the facilities of other libraries to the research man.

Because the General Foods library is well used, a library assistant spends more than one-half of her time recording incoming literature and circulating requested information. At present there are some 1,800 books, journals, monographs, and patents out on loan. In addition, some 200 journals must be sent each month to contributing abstractors.

A collection of published literature, regardless of size, will be limited in usage unless there is a complete and thorough index. Take away a research library's index and there remains merely a repository—a storage room of technical literature.

Since our needs at General Foods are specialized and highly individualistic, compared with the calls made upon other libraries, treatment of subjects is built on our own common usage, and our cataloging practice differs from the usual. In our experience with food chemists, the call for author-and-title entry is limited; consequently our catalog is a split catalog —author and limited title, and a classified subject catalog.

A chemist looking for material on utilization of tomato waste is not concerned whether it be a chapter in a book, a reprint or an Agricultural Experiment Station bulletin; so our subject cards, regardless of the form of the publication, are filed in one master subject catalog.

Confidential Reports

Closely allied with the indexing of published literature is the indexing of confidential research reports issued by Central Laboratories and other plant laboratories of the General Foods Corp. Research reports are a source of carefully organized information accumulated in the course of a project investigation. They constitute not only a valuable record of research work accomplished, but also serve as a basis for future research projects. Two copies of each report are housed in the library vault—one copy for lending, the other a permanent record copy. Reports are arranged numerically; for example, all the work on cacao, re-

gardless of the issuing laboratory, is filed under a single numerical designation, and it is indexed by subject and the name of the individual responsible for the work done.

Since research reports often contain valuable information which is not evident from the titles, the subject headings used tend to be specific so that data can be located readily. Under the main subject heading, which is the name of the product, we bring out such information as the following: Raw materials and ingredients used, analysis, composition, chemical properties, physical properties, formulas, bacteriological data, processing methods, processing equipment, plant operations and procedures, quality control, waste utilization, packaging data, testing methods, uses and applications. Before new research work is undertaken, research reports are consulted, not only for specific data but also from the standpoint of what work has been done in the past.

Abstract Services

Because the output of literature on food chemistry and related fields is so great that no chemist can possibly do all the reading even on his own specialty, and since present abstracting services are not specific or timely enough for our needs, we solve this problem by issuing a periodic bulletin of abstracts, based on 200 journals received monthly in the library. Titled *Current Abstracts*, this bulletin deals with scientific and technical literature of interest to the research and development department. It is prepared cooperatively, the research staff contributing about 60 percent of the abstracts and the library being responsible for the remaining 40 percent. *Current Abstracts* is distributed semimonthly within the company.

The system of abstracting used has eliminated duplication in reading; two abstractors now cover a particular scientific journal, where formally 20 men thought it essential to receive it. *Current Abstracts* is a tangible way of keeping the chemist's laboratory door open to research developments in universities, government laboratories and other industrial laboratories, not only in this country but in the technical world at large.

Literature Searches Made

In the present state of specialized research, virtually every scientific contribution is an extension of the recorded work of many earlier researchers. Consequently, all literature, including patents, bearing on a subject should be investigated in order to prevent repetition of experimental work that has already been established.

Not only does the library save the chemists' time, averting duplication of expensive experimental work by preparing literature searches, but quite often a literature search discloses some forgotten data which may be of value in developing an idea, or it illustrates what may be expected under certain conditions. By means of literature searches, the librarian cuts down on the reading time spent by the chemist —for a good literature search focuses the subject requested.

Examples tell the story: Before the organic chemistry laboratory undertook a study of the low temperature reaction of amino acids and carbohydrates in concentrated aqueous solution, it became necessary to know the work of Maillard (who first studied the amino acid reaction), Lintner, Ambler, Ruckdeschel, and several other investigators, in order to understand the chemical nature and the mechanism of the reaction.

Before experimental work was done on dehydrated potatoes for the Army, information was accumulated on varieties and grades of potatoes and the influence of locality and storage on quality.

Other instances which illustrate the value of literature searches to the development of General Foods products are: Use of chlorine dioxide as a flour bleach, effect of non-sugars on Brix determination, extraction of caffeine from coffee, clinical uses of niacin, histology of citrus fruits, and the concentration of orange juice by freezing. Investigations such as these are carried out during the planning stage of every research project.

Where a cursory review of the literature is needed, or where a general picture of a subject is requested, annotated bibliographies are prepared. Since these are abstracts of references on a subject, the laboratory man uses them as a basis for further selective reading. When our veterinarian at the Gaines Food Kennels wanted to know what literature was available on dog foods, a list of abstracts was the answer. We are currently preparing a definitive annotated bibliography on gelatin for a General Foods' subsidiary.

Library services, however, are not limited to literature searches and annotated bibliographies, but most frequently take the form of specific factual requests about such matters as the pyridoxine content of feeds, velocity of sound in steam, absorption spectra of organic compounds, composition of coffee pulp, or current market price of raw materials.

Other Services

Though our library primarily aids the research personnel, service extends to other departments of the organization—to a production department interested in methods of determining total solids in boiler water; to the personnel department, anxious to obtain the original message which Albert Einstein sent to the Sixth Constitutional Convention of the United Office & Professional Workers of America at Cleveland. When we introduced a fresh orange juice concentrate on the market, the merchandising group needed information on how the vitamin content of this product compared to the vitamin content of fresh and canned orange juice. Before our research executives undertook a trip for the purchasing department to check availability of tapioca from Brazil (since the Java market was closed), the library was able to collect pertinent market information from the Brazilian Trade Council in New York.

The library's importance to food industries is clearly shown by the relative position of librarians and libraries to the organization as a whole. All of the 15 largest U. S. food libraries report directly to top men—to the vice-president in charge of research, or to the director, associate director, or assistant director of research. The library as a unit is placed on an equal footing with other functioning sections in the research organization.

Expenditure for research in food industries averages less than 1 percent of gross sales, and the direct expense of food research libraries is generally under .5 percent of the total expense of food research. The initial expenditure on food research is negligible in comparison with the dividends produced by food research in developing new products, in utilizing waste products, and in improving processing methods.

Since the library contributes indirectly to the wealth created by research by providing technical services essential to effective research activity, investment in the library is one of the expenses which is essential in the modern food research organization.

"THE LIBRARY'S—

. . . IMPORTANCE is clearly shown. All of the 15 largest U. S. food libraries report directly to top men—to the vice-president in charge of research, or to the director, associate director, or assistant director of research."

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. . . VALUE is not gaged merely by size. A library containing but 500 volumes can competently serve the personnel if its librarian is alert and resourceful."

EDITORIALS

COMMENT AND OPINIONS

Look Before You Leap

PROGRESSIVE executives and technologists in food plants must quickly take advantage of sound new developments which offer quality or cost advantages. At the same time, they dare not be so quick on the up-take that they use something which is not thoroughly tried and tested.

This applies particularly to new ingredients in a product, such as new solids or new emulsifiers. It pays to make sure that the new ingredient is safe and that it does not affect quality in some unexpected way.

"Is it safe?" applies with equal force to new chemicals used in the plant. Some wetting agents, for example, are said by one health authority to have a degree of toxicity. New insecticides and solvents also may be toxic. For example, a number of the DDT vaporizers do a good job, but if care is not taken the insecticide may get into the product.

So be progressive—but beware.

High Replacement Costs

QUAKER OATS CO. has changed the term "surplus" on its balance sheet to "earnings retained in the business." And behind this lies a problem faced by all manufacturers. It is the problem of the high cost of new plant and equipment. A new warehouse being built by Quaker is costing approximately $5.28 per square foot. In 1941 the figure would have been $2.85. The company owns 615 automobiles for the use of salesmen. The cost of these cars today is about $870,000. Seven years ago they could have been bought for $540,000.

As a result of such cost increases, the management correctly reasons that companies have to make larger earnings and retain a substantial amount in the business if they are going to keep in a strong working-capital position. And don't call it "surplus."

General Mills in the past two fiscal years has invested, in plant and equipment, approximately 17 million dollars at costs which have materially exceeded the levels of prior years. This poses two problems: If this level of costs should continue or increase, additional capital may be needed to finance replacements from time to time. Certainly the depreciation accrued on lower original costs will not provide the necessary funds. But should construction costs take a substantial dip in the future, recent construction would exceed normal values, perhaps necessitating a write-down in order to maintain a competitive position.

As a solution to the problem of inadequate depreciation charges in a period like this, it has been suggested that the tax regulations be changed. The idea is to base depreciation charges on replacement costs instead of original costs, as at present. That really makes sense!

But another "solution" has been devised by some companies. It is to delay the replacement of aging plant and equipment on the gamble that construction costs and equipment prices will drop. The reasoning is that costs may fall far enough and soon enough that accumulated depreciation dollars will do the job and not too much will be lost through the inefficiency of the old plants.

This is indeed gambling. Indications are that wages may go still higher and that prices of capital goods will stay up for quite some time, even though they may level off next year. Nothing short of a depression will knock replacement costs down to any appreciable extent. And fortunately no depression is expected soon.

This means, then, that companies will merely pile cost on top of cost if they hang on to inefficient plant and equipment. In the end they will have to pay through the nose for replacements, and in the meantime will have operated on a high-cost basis.

Frozen Food Buyer Says—

WHAT'S wrong with frozen food packages? Nothing in many cases, plenty in others. Let us consider the observations of the frozen foods buyer in perhaps the largest single frozen food retailing operation in metropolitan New York.

Window packages too often are torn by handling.

Wrappers frequently are not securely sealed, with the result that ends come loose. This not only spoils the appearance of the package, but permits dehydration.

The design on some packages is ridiculously ineffective in "selling" the product. Mechanically the package may be quite good, but it must have an eye-appeal which only a competent designer can create. Plain lettering on a plain background has no sales appeal. And a white background takes on a scuffed appearance after a little handling. In the mind of the buyer referred to above, the design of the Dole frozen pineapple package is "tops." This package has a well-sealed overwrap with a dark blue overall color and an appetizing picture of the product in yellow.

Transparent wrappers which do not cling to the product so as to avoid air pockets sometimes frost inside, giving the package an unsightly appearance. This applies to the all-over wraps and to the boat-type container with a transparent cover. Yet a transparent envelope for a small cubed steak displays the appetizing qualities of the product so well that the item sells readily.

The metal-end paperboard container—which is handled so efficiently on the freezer's production line—is considered good by this buyer even though it is a little difficult for the housewife to open.

But what container do you think came in for the greatest praise by the buyer in question? It was none other than a square lithographed tin can in which frozen fruits are packed by Pacific Grape Products, Modesto, Calif. The can protects the product perfectly, is not damaged or marred in handling, and its square shape permits easy stacking in the self-service display case.

Handling Chilly Goods

As COLD WEATHER comes, a minor but sometimes important problem develops in the factory. Goods brought in from outdoors sometimes are so cold that they sweat badly, damaging materials or labels. But many food plant folks seem to forget how to anticipate and prevent this difficulty.

If the surface of any goods or package is below the dew-point of the air to which it is exposed, and if it is a conductor of heat, there will be dew formation. Exposure to dry air during warm-up prevents this and avoids subsequent damage. When cold goods must be brought in under conditions that threaten sweating, it is just as effective to choose a dry room as to choose a cold one. Your ingenuity and a psychrometric chart will save a lot of nuisance when this is a problem.

Spinach Soap

WE REFER to soap for washing spinach, not soap made from spinach. And we are serious, too. Some of the new detergents, not really soaps, are good for washing spinach and other vegetables in a way that excels the performance of the old-fashioned cleaning methods.

There are new cleansing agents for everything from the floor and walls to the most delicate commodities which must be kept clean about the food plant. We wonder how many of the spoilage problems, which bother almost everyone from time to time, could be very cheaply eliminated if reconsidered from the standpoint of better cleansers for plant housekeeping.

Lately we heard about one soapless soap that is used to the extent of 5 lb. of powder for each mile of highway that's being washed. It is employed in cold water, and no change in the equipment used for street flushing is needed. The results reported are amazing, for street grime and grease seem to rise up and scamper into the sewers with this small application of modern science.

But when one picks new cleansers he should do it with the cooperation of competent technical advisors. There are spinach washers, egg-shell washers, floor washers, and hundreds of others. Anyone might help for almost any of the jobs, but there's a best one for each. It's worthwhile to hunt for it and use it. The cost of good housekeeping will be reduced and the benefits of cleanliness will show quickly on the profit line of the balance sheet.

It Pays to Play Underdog

MANAGEMENT might take a tip from P. J. Ritter Co. on the psychology of numbers in management-labor meetings. When opposing factions get together to discuss a controversial point, the side with the greater number of representatives is naturally assumed to have an advantage. The other side then feels that it is in the position of the underdog.

Ritter management very smartly puts itself in the underdog position at meetings with labor to create an atmosphere of fair play in respect to the union. At the weekly meetings, management is represented only by the employee-relations director and his secretary. The workers, on the other hand, have six union stewards as their spokesmen at these meetings. In contract negotiations, the ratio is 3 to 9 or 10. This is no small factor in the successful Ritter labor-relations program.

Advantage in numbers on the side of labor is particularly important because the workers consider management men to have the advantage in respect to education, training and experience.

But management never should let itself be ineffectively represented in such meetings. Its spokesmen not only should be well-informed about all phases of the problems to be discussed but should be backed up by plenty of pertinent statistics. The latter is particularly important in view of the tendency of unions to use high-caliber economists to determine just what a company can and can't do in terms of economically feasible concessions.

What is Fit for a Dog?

ONCE UPON A TIME a food company had an enormous quantity of waste, because the edible portion of its raw material seldom yielded over 35 percent. Very properly the head of the company ordered the research department to see what could be done with the other 65 percent, which was principally protein material. And you know, just as well as the next person, that proteins are about the most expensive food materials in existence.

So a chemist went to work, and in the course of time he developed a dog food that nutritionally was wellnigh perfect. Any self-respecting canine should thrive on it, and the company would have a very profitable byproduct.

Being a cautious man, the president of the company made a gift of 200 lb. of the new dog food to a lady of his acquaintance who owned a large kennel populated with some 30 German Shepherd dogs.

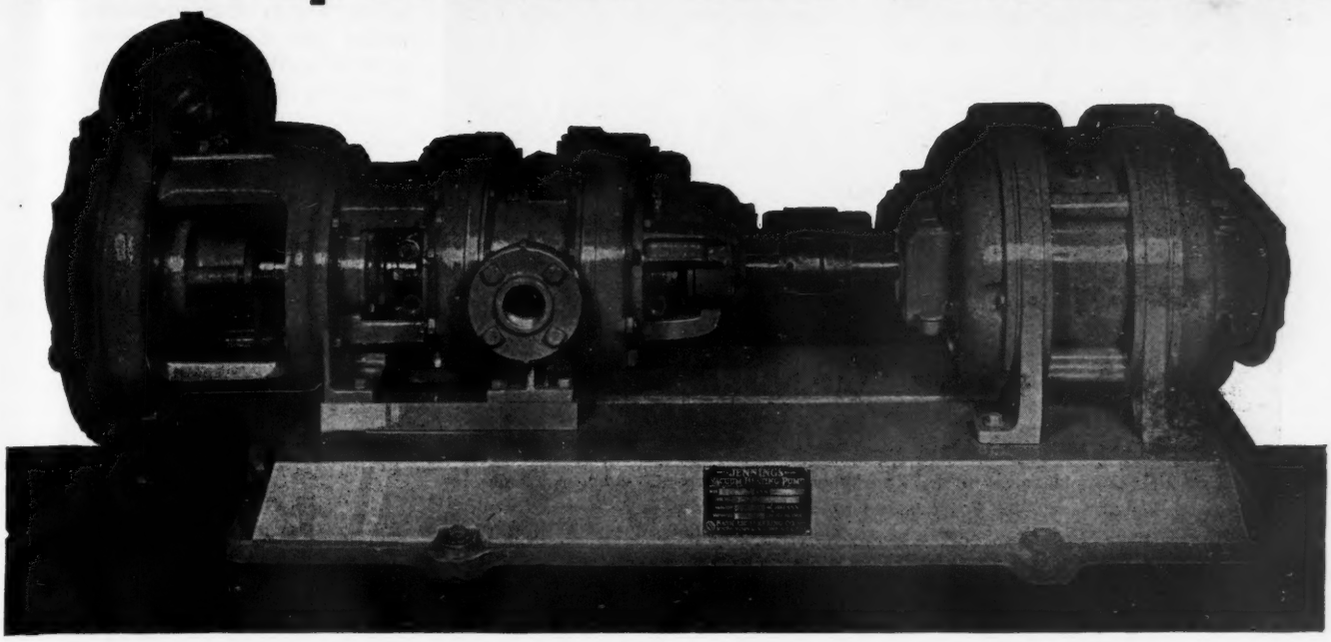
The shipment arrived by express, prepaid. An hour later the president received a telephone call from the kennel owner. *She* had tasted the new dog food, would not permit her animals to eat it, and had sent it all to the dump. She recommended that Mr. Big taste the stuff himself and be guided accordingly.

Normally, we do not pay much attention to the pet food business, but we related this incident to a chemist who was studying dog food and inquired if he had ever tasted the product himself. He had not. Furthermore, he expressed the opinion there was no known way of correlating human-taste preferences with animal-taste preferences.

It is our opinion, however, that a pet food that tastes good to humans will have a greater possibility of success than one which an animal will eat only when it is nearly starved.

At least one manufacturer of dog food maintains a "consumer" test panel. Perhaps this should be a standard quality control procedure for such products.

Nash—the Perfected Vacuum Pump for Evaporators and Condensers



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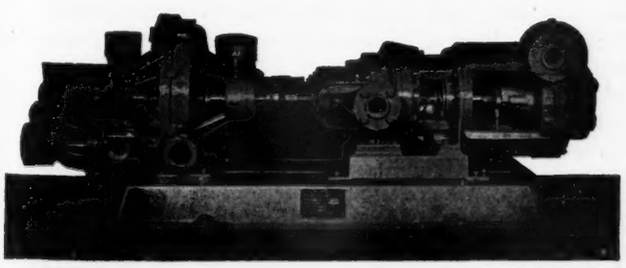
Nash Vacuum Pumps for Evaporator and Condenser Service offer unusual advantages. Vacuum is non-pulsating, producing uniform operating conditions and assuring a better product. Nash Vacuum Pumps have no valves, gears, pistons, rings, or mechanical complications. The single moving element rotates without metallic contact, and no internal lubrication is required. In standard design these pumps maintain vacuums up to 27" of mercury.



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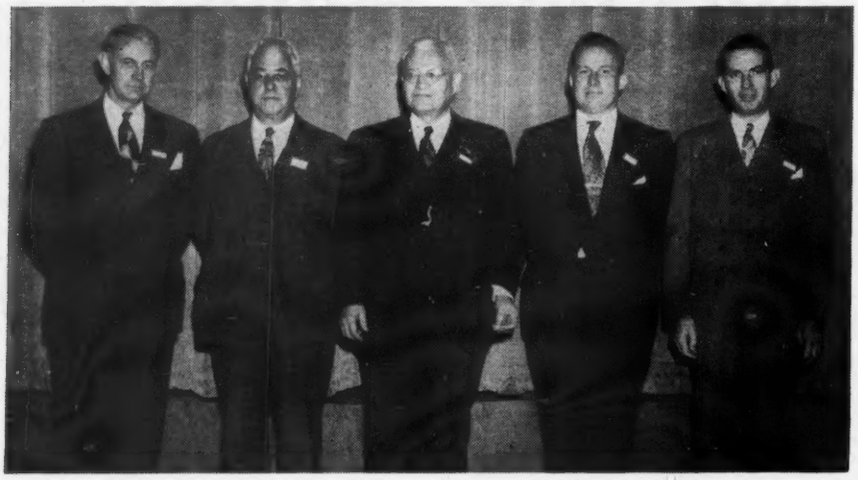


OFFICERS and committeemen at the Packaging Institute annual meeting. From left: G. W. Reese, American Can Co., nominating committee; Mason T. Rogers, president, Packaging Institute; L. V. Burton, executive director, Packaging Institute; R. de S. Couch, General Foods Corp., technical committee; and W. O. Cullom, Celanese Corp., advisory service committee.

Attack Packaging Wastes

Institute members told to develop coordination of operations and standardization in order to increase efficiency

SUPERVISORY coordination and control of packaging functions to cut down the waste in dollars and the question of further standardization of packaging machines were highlighted at the 10th annual meeting of the Packaging Institute in New York City last month.

Biggest waste in packaging dollars, as pointed out by L. V. Burton, executive director of the Institute, arises from a lack of proper management and not from any inability on the part of packaging specialists, technicians and packaging engineers to solve a problem. Lack of centralized control of packaging, Dr. Burton said, is not only amazing, but expensive. It is, therefore, imperative to place the packaging function under proper centralized control if these wastes are to be avoided.

Package-Control Procedure

Setting up such a centralized control, the director continued, depends upon the size of the company. It can be accomplished by one packaging man in a small company, or by a packaging committee where the operation is large and complicated. If a committee is used, the secretaryship should be a full-time job.

The secretary, moreover, must be given adequate authority to carry out his responsibilities. He should be able to insist that no changes, either of ingredients or processes, be made without a parallel investigation as to the effects of packaging upon the product. The same should be true of changes in packaging materials, which should be made only after full tests and with the approval of the packaging laboratory.

Changes in sales policy can also seriously affect packaging requirements, and should be cleared through the secretary to see if they impose added packaging requirements or obviate the need of some presently used protection. Such changes, Dr. Burton said, might involve different lengths of time in distribution channels, differing climatic conditions, and changes in means of transportation, or in types of branch warehouse storage.

Getting down to specific operations, F. G. Marshall, Texas Co., and John A. Warren, American Home Foods, outlined workable operating programs. Mr. Marshall presented in detail the form and functions of the packaging committee of his company, which over the years has been contributing great savings in packaging dollars.

Evolved from a former subcommittee with a scope limited to decisions chiefly affecting package color and design, the present ten member committee of the Texas Co. now represents the combined experience of all departments within the organization and makes decisions on all revisions, changes and developments pertinent to packaging materials and equipment. Departments represented in this packaging committee are domestic and foreign sales, manufacturing, supplies, distribution, packaging, advertising, legal and purchasing.

The committee appoints one member to act as secretary, and his full-time job is collecting packaging subjects until a full program justifies a committee meeting. Packaging matters are given quick dispatch, for the packaging committee is a part of a larger general company committee reporting directly to the president on the establishment of all manufacturing and marketing policies.

Discussing the place of the packaging engineer in the organization, Mr. Warren predicted that the average American business enterprise can save a sum equal to 5 percent of its net earnings by intelligently using the talents of the package engineer in its employment. He cited one food company which completely revamped its packaging operation after a survey by the packaging engineer. When the installation of the necessary equipment has been completed, the company will have a better package, and it will save at least $250,000 a year. In another similar case, he said the savings would be equal to 29 percent of last year's net earnings.

In the operational scheme, Mr. Warren thought that in a single plant the package engineer should have very definite responsibilities and should report to the operations head of the plant. Where there is a set-up of decentralized plants, the engineer or the package engineering department should be responsible to the executive operating head.

Proper Equipment

Robert G. Dexter, of the consulting engineering firm of Barkley & Dexter, discussed the problem of what can be done in cases where standardization of machinery is impossible, and he stated that special or "tailor made" equipment can be employed economically where there is: (1) Large production and considerable hand labor; (2) possible product improvement; and (3) possible increased market, elimination of difficult hand operations or saving of limited flooor space.

If no machinery is found exactly suited for a special task, the manufacturer should first investigate the pos-

sibility of adapting the present equipment to the job or of altering the product to fit the machines available.

Where the use of special machines is indicated, adequate time and money should be set aside for preliminary investigation and design. The development of such machinery involves financial risks which should be compensated by high returns.

Another prime question was, "What causes variations of net weight or fill?" The many conditions that can result from diverse methods used in filling and weighing were discussed in detail by Martin Brumbaugh, director of the department of statistical analysis, Bristol Laboratories, Inc. The need for selecting proper weighing and filling equipment for any specific packaging job was mentioned, but Mr. Brumbaugh dealt in more detail with methods of maintaining statistical control of the operation.

Principal emphasis was placed on the effective use of a control chart. Properly used, this chart guarantees safe operation and minimizes the risk of manufacturing an unsalable product.

Albert B. Drake, president of Drake, Startzman, Sheahan, Barclay, Inc., distribution and materials handling consultant, spoke of the problems of integrating packaging with materials handling. Admitting that eye-appeal, advertising value, and point-of-sale value are important aspects of packaging, he stressed that until you get up to the point of final sale, the basic considerations of package design are: Protection of product, economy, and the way the package lends itself to storage and handling.

Materials Handling

Size and shape of shipping containers become very important in relation to the many movements to which the package is subjected. The secret of the most economical method of distribution of a product from the end of the production line to consumer is in the simple statement that the largest practical package must be delivered to the farthest practical point that is closest to the consumer.

Many large manufacturers are unaware of the tremendous savings that can be obtained through modern materials handling methods. Palletized shipping embodies so many economies that it cannot be overlooked. The 40×48 pallet is generally used as a standard size and has been adopted by Army and Navy.

A square shipping container does not lend itself to easy palletizing or easy stacking—the fact being that the nearer the carton is designed to the brick shape, the better it is.

The development of the pallet pool

(*Continued on page* 215)

Meat Packers Discuss Supplies

American Meat Institute considers future program as well as today's pressing economic and operating problems

LONG-RANGE plans to supply the increasing demand for meat, as well as the present day packing and livestock problems, were given a thorough airing at the 43rd annual meeting of the American Meat Institute, in New York City, in September.

Striking at the heart of the meat supply question, A. A. Smith, president, American-National Livestock Assn., emphasized that the only way to increase the beef supply was to decrease slaughtering, putting the cattle into feed yards to gain that extra 100 to 500 lb. While this would increase the supply to some extent later this year, it would require two to three years for the program to fully pay off.

He also advised livestock men to be alert against possible government policies to reduce production. If the government must step in and handle so-called surpluses, he said, let the spending be done to increase consumption rather than to control production.

One of the major reasons for our reduced meat supply, in the opinion of J. M. Jones, secretary, National Wool Growers Assn., has been the government's policy of reducing the amount of livestock permitted to graze upon federally controlled lands. The government, he said, controls between 50 and 76 percent of all range lands. Livestock permitted to graze on this land has been reduced by 44 percent in the case of cattle and 54 percent for sheep. The cattle population ten years ago, he asserted, was more than 85,000,000 head. Despite our increased human population, cattle has now fallen to 76,000,000 head.

Increase Production

The note of abundance rather than scarcity was also struck by John F. Krey, Krey Packing Co., and chairman of the board of AMI. Present production, he declared, cannot handle present demand. Since there is not much more land that can be converted into farms, other methods must be found to increase the supply. As one means to this end, Mr. Krey advocated continuous production of hogs, rather than the present one or two litters a year.

Getting down to immediate problems of the packers, A. J. Steffen, Wilson & Co. estimated that the cost of treating liquid wastes within industry was over $160,000,000 annually. He was convinced that the meat industry spends a considerable portion of this amount and could effect tremendous savings in waste treatment by a well planned approach to the problem. He recommended waste prevention at the source and utilization of unavoidable wastes as the most practical and efficient ways of preventing pollution.

Stream pollution is caused, he said, by the solids carried in the liquid and the oxygen demand of the liquid. Solids form unsightly sludgebanks in the stream and the demand for oxygen robs the stream of the oxygen it carries in solution. The tendency for a waste to pollute a stream can be measured by a sanitary engineer. And Mr. Steffen firmly stated that the best way to combat the waste problem and avoid expensive mistakes is to secure the counsel of an experienced sanitary engineer.

Prepackaged Meats

In a report of a survey of self-service meat developments as seen by a meat packer, Walter S. Shafer, vice-president of Armour & Company made the following points: It appears that the whole trend of food merchandising is toward more self service. However, this style of selling looked most attractive from the retail standpoint—and then mostly in stores grossing over $2,000 weekly. Cold cuts, luncheon meat and similar products were seen best suited for profitable self-service meat operations. Prepackaging of fresh red meat—unless quick frozen—has not yet been found satisfactory. Prepacking by a packer in anticipation of sales requirements poses so many problems that it seems difficult to visualize how packers could do the job on a large scale. It would involve considerable additional facilities and added capital investment.

Wesley Hardenbergh, president of the American Meat Institute, defended the packers against responsibility for today's high prices. He reiterated frequently repeated statements of the Institute, pointing to last year's net earnings by all meat packers as averaging about ¾c. for each pound sold. Under these conditions there could be no significant change in retail prices if the packers operated at no profit.

Today's highly competitive situation in the meat business, he said, is the only sound way of matching supplies with consumer buying power. Experience shows, he added, that all efforts to regulate meat prices in peacetime results in black market bonanzas.

NEW PACKAGES & PRODUCTS

Redesigned Package for a Veteran Candy

A DESIGN HISTORY extending over a 53-yr. period was reviewed when Kerr's Butter Scotch, Inc., recently revamped its famous package. The new carton is printed in bright colors of yellow, red and green. The trademark picture of Robert Burns has been dropped so as to give prime consideration and emphasis to the Kerr name.

Kerr brothers founded the firm in Ontario, Canada, in 1895, initially using paper bags to pack the candy. In 1907, when a branch was opened in New York, folding boxes were introduced. The depression years of the '30s resulted in a candy slump, hence in 1934, the box was redesigned to stimulate sales. The next change, in 1937, was necessitated by Federal Law which required the ingredients and other pertinent information to be printed on the main panel of the box. At the same time, the contents of the box were changed from a bar form to individually wrapped pieces.

Postwar competition and a drive to increase sales volume brought about the present change. Teddy Mazaika, of Teddy Studios in New York City, designed the package. A new trademark of a Scottish Bagpiper has been combined with a simplified plaid.

The box is manufactured of super white patent coated newsback board by Universal Folding Box Co., Hoboken, N. J. This firm has been the supplier of the packages since the candy was first introduced in the U. S.

Start Frozen Food Line

QUICK-FROZEN strawberries and raspberries packed in metal-end cartons are being distributed under the "Little Miss Moffett" label by the S. A. Moffett Corp. of Seattle. A complete line of frozen foods with this label is expected to be established during the coming year.

The berries are packed by the Turner Packing Co. of Snohomish, Wash., and the Capitol Co. of Olympia, Wash. Can-Tainer Corp. of Seattle produces the cartons.

New Pecan Candy Bar

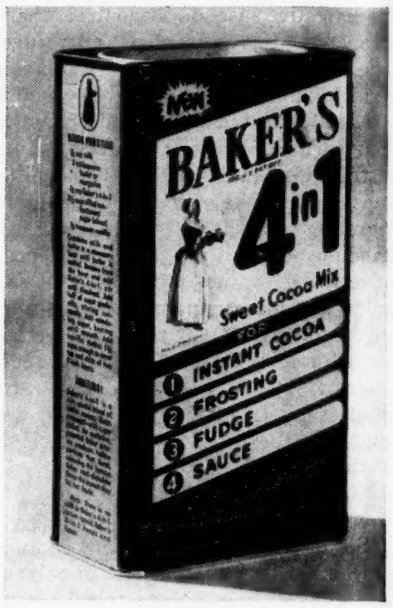
A MILK CHOCOLATE coated candy bar composed of a soft white center filled with rich pecans has been introduced by Candymasters, Inc., of Minneapolis. Called Pecan Grove, the new bar is wrapped in cellophane incorporating a color scheme of appetizing chocolate brown and peach beige.

Oldtimer in New Dress

THE PACKAGE of Gorton's Original Codfish has been given a newer look. The carton now conforms with the firm's other seafood products by adoption of the well known red, blue and yellow Gorton colors in the familiar design. Company decision to change the appearance of this veteran product was a move to achieve uniformity and more striking shelf display.

Multipurpose Cocoa Mix

BAKER'S 4 in 1 Sweet Cocoa Mix is a newly developed product now being introduced by the General Foods Corp. As the name indicates, the mix has four principal adaptations—as instant cocoa, and for frosting, fudge or chocolate sauce. It can be prepared in a few minutes.

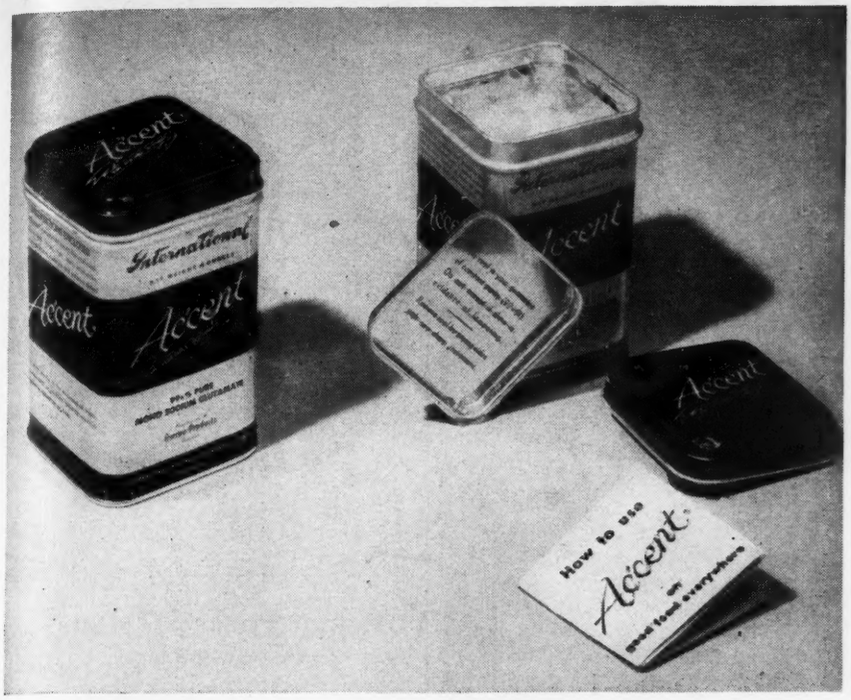


The firm's food technologists have been working for over 12 years to perfect a cocoa mix which would serve most of the important needs of the house-wife. Using modern spray-drying methods with a patented stabilizing process, pure Dutch processed cocoa is blended so that the rich chocolate flavor is maintained in any of the variety of products.

First offering of the product will be made in the Chicago area.

Improved Catchup Bottle

A NEW DESIGNED bottle is a feature of the H. J. Heinz Co.'s 1948 catchup pack. The new container has proportions similar to bottles of former years, but it now features a more graceful neck and "streamline" appearance to give individuality on the grocer's shelf.



M.S.G. in Metal Containers for Retail Stores

THE VEGETABLE PROTEIN derivative, mono sodium glutamate, manufactured by International Minerals & Chemicals Corp. under the tradename "Accent," is now available in a new rectangular, 4-oz., all-metal container for sale in retail stores.

Used to enhance the natural flavors of foods, the product has been utilized for centuries in the Orient but just recently has been produced domestically in sufficient quantities to make it available for use by the average housewife or cook.

The new container (see photo) is reported easier to fill at the packing stage, while simplifying storage and shipping operations, and affording a higher degree of protection. An inner seal of metal, meshed-in during the packing process, makes the package tamper proof. Between the seal and the outer closure is placed an instruction leaflet.

Additional protection is afforded by the use of a cellophane liner, which also provides visible inspection of the white crystals.

The package is in red and gray colors, lithographed to insure clean-looking, permanent labels. C. S. McNair & Associates of Chicago designed the container. It is manufactured by J. L. Clark, Rockford, Ill.

New Cream Pie Mix

COMPLETE pie mixes, requiring only the addition of cold water to become the basis for a rich cream pie, are being marketed by Betty Gaylord Products, New Rochelle, N. Y. The products are offered in two flavors—lemon and vanilla—in 10-oz. cartons which contain the crust and filling materials in separately-packed paper bags.

The company was formed within the last year when Mrs. Gaylord decided that she could use one of her mother's old fashioned New England recipes to prepare a mix to yield pies of superior quality. After months of testing, the mix is now being sold throughout the New York City area, and nationwide distribution will soon begin.

Frozen Lemon Puree

LEMON JUICE with a controlled quantity of inner fruit cells and peel oil has been frozen to form a puree for use by bakery, ice cream and beverage manufacturers.

Packed by Frosted Fruit Products, Inc., of Los Angeles, the compound has 16⅔ percent sugar content. It is available in 1-gal. hermetically sealed cans and 32-lb. tins. Maker states that it imparts to finished food products a flavor equal in strength and quality to that of fresh fruit and at half the cost.

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Give Your Products This Combination of Merchandising Power!

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against moisture vapor transmission. Guard flavor, freshness and food value.

PERSUADING EYE-APPEAL
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CONSISTENT QUALITY
of packages speaks well for your product; permits high speed automatic packaging.

STRONG BRAND IDENTITY
established by coordination of design and printing. Promotes your name.

COMPETITIVE PRICES
of Oneida's bag packages make for lower packaging costs. Unit package costs lowered.

This highly desirable combination of packaging virtues is now being provided for baked goods, meats and sausage, grain and cereal products, nuts, potato chips, dehydrated and frozen foods, candy and many others.

Oneida's complete line includes bags, envelopes, printed wraps and continuous rolls of cellophane, glassine, waxed glassine, laminates, dry wax, parchment, M.G., White Wove and other papers.

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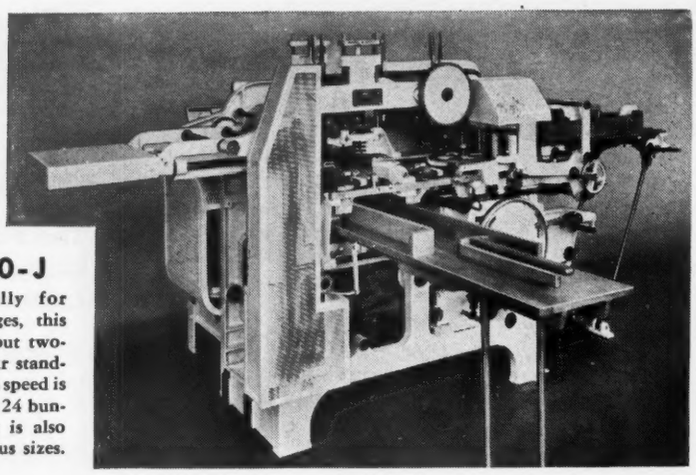

New

Model F-10-J

Designed especially for smaller size packages, this new machine is about two-thirds the size of our standard F-10 bundler. Its speed is adjustable from 8 to 24 bundles per minute. It is also adjustable for various sizes.

ALSO SAVES ON LABOR SHIPPING COSTS FLOOR SPACE

Companies that have adopted machine bundling are making large savings. That's why more and more manufacturers are switching to this modern method of packing their products.

Machine bundling replaces costly cardboard boxes with economical wrapping paper in roll form. That makes an immediate saving of up to 60% on material costs alone. Then there is the saving in labor—for one bundling machine with one operator will produce up to 24 bundles per minute. Since the paper used is far lighter than cardboard boxes, there is also a saving on shipping costs, both to and from your plant. And a roll of paper will replace hundreds of boxes, saving on storage space, too.

Our bundling machines can be fed directly from the cartoning or wrapping machines. Goods can be bundled in dozen or half-dozen lots, and the machine can be adjusted to accommodate various sizes.

SURPRISINGLY STRONG. The bundle produced is sealed as tight as a drum and stands up well in shipping and handling.

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PACKAGE MACHINERY COMPANY
Over a Quarter Billion Packages per day are wrapped on our Machines

Vacuum Packed Tidbits

PROTECTED crispness and greater shelf life are provided for rich cheese sticks by vacuum-packing them in metal cans. The new delicacies are manufactured under the brand name of Au Gourmet Cheese Sticks for Meyer & Lang of New York City.

Each can contains 60 of the tasty tidbits packaged in a double layer. The ingredients include cheese, flour, butter, shortening, milk, salt, spices and leavening. Product is distributed nationally through retail outlets.

Chips in Useful Cannister

A NEW PACKING of potato chips in a red, cylindrical, 12-oz. container has been announced by Sunshine Biscuits, Inc. The new tin is kitchen-shelf size (8½ in. high) and has a permanent knob on the lid, thus is adaptable for a variety of pantry uses.

Release of this cannister rounds out a complete line of different-sized Sunshine Potato Chips packings to fill many household needs. The container offers opportunity for display build-ups for all types of grocery stores.

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WHEN YOU NEED IT!
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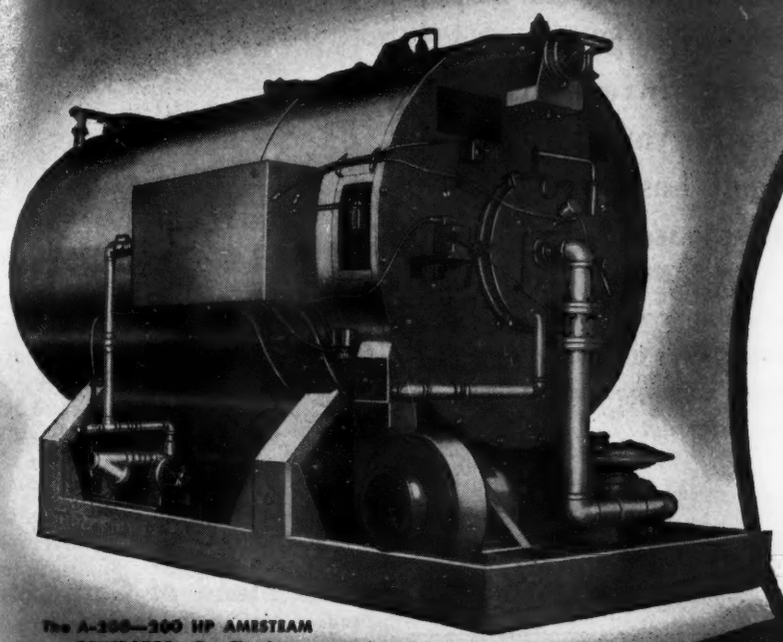

The A-100—300 HP AMESTEAM GENERATOR—Gas Fired.

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- DEPENDABILITY

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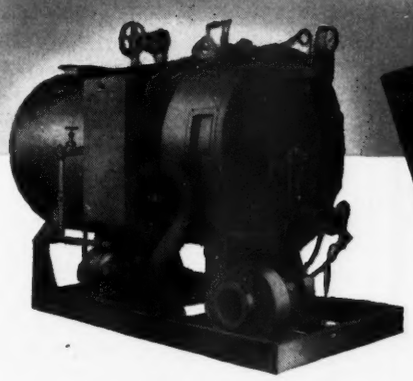

The A-25—25 HP—Light Oil Fired.

• Why struggle to produce steam by the old-fashioned method of hand firing coal — when the modern oil or gas fired **AMESTEAM** Generator will give you full steam pressure in a few minutes.

AMESTEAM Generators are fully automatic in operation, guaranteed 80% efficient. They eliminate all the disadvantages of coal firing — there is no dust or ash — no constant plume of smoke pouring from your stack — your steam pressure is practically constant and a minimum of attention is required from the operator.

• The Unit is simple and compact — no special foundation and no large stack is required — no brick settings to install or repair. Simply connect the steam, water, fuel and electric lines, provide an outside vent for flue gas, then press the button.

AMESTEAM Generators are available to suit your particular requirements — sizes from 10 to 300 h.p. for Light Oil, Gas or Light Oil-Gas Combination — 50 to 300 h.p. for Heavy Oil or Heavy Oil-Gas Combination. For localities where both Oil and Gas are readily available, Oil-Gas Combination Units are especially desirable, as operation may be quickly and easily changed from one fuel to the other. Mail coupon for specific information.

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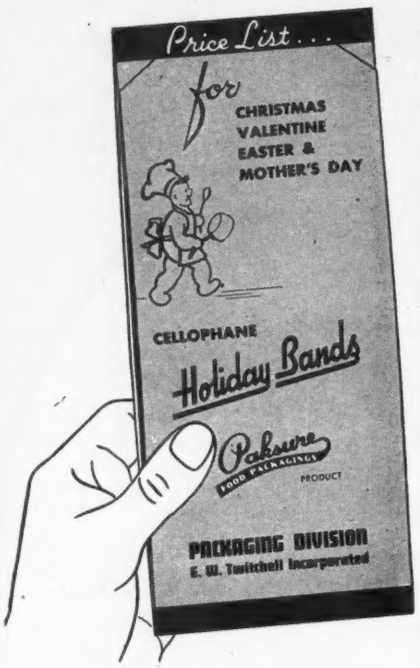

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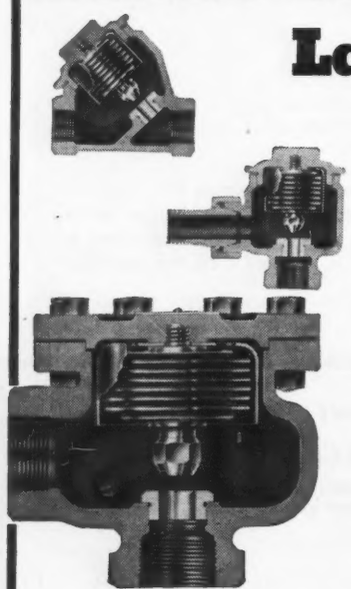
Lowest Steam Loss ← Largest Capacity



See why an increasing number of America's leading plants are standardizing on Nicholson traps. Test trap gladly sent.

Comparative tests by large trap users show: record low for steam waste; 2 to 6 times average drainage capacity; operate on lowest temperature differential; no freeze-ups; greater simplicity (fewer spare parts to stock). 5 types for every purpose; size ¼" to 2"; pressure to 225 lbs.

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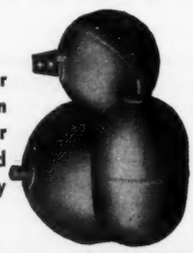
Stainless, monel, steel, or plated steel. Welded. In all sizes and shapes; for operating mechanisms and as tanks or vessels. 2-day delivery. BULLETIN 348.



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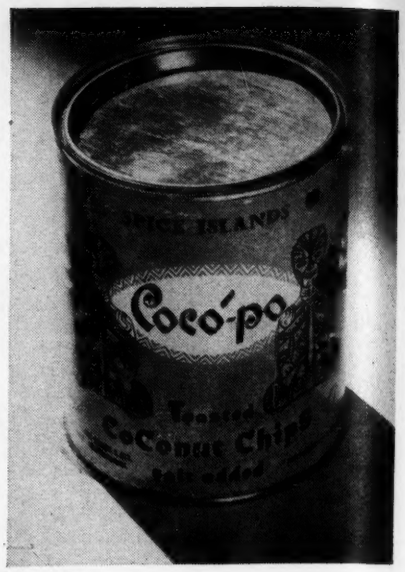


Toasted Coconut Chips

A NEW FOOD specialty made from thinly sliced, toasted and salted coconut chips has been introduced by the Spice Islands Co., San Francisco. The chips, called Cocopos, may be served as snacks and appetizers, or can be added to the frosting of cakes.

The product is packed in cans (5 oz. net) and a slip cover closure is used to insure freshness and crispness.

New Blend of Corn Sirup

HONEY FLAVORED "Sweetose" syrup is now being distributed nationally by A. E. Staley Manufacturing Co., Decatur, Ill. The new product, produced from a blend of extra-sweet "Sweetose" corn sirup, granulated sugar sirup, and pure strained honey, is offered to consumers in 1½-lb. bottles and 5-lb. jars.

Hitching Post Foods

FROM a Savannah plantation comes a new line of foods produced by an all-woman organization headed by Mrs. R. Kress Frame, daughter of the late C. W. Kress, who was president of the chain of Kress stores.

The business was launched about a year ago with the purchase of the exclusive rights to the recipe of the time-honored dressing served at the Hitching Post Inn, Aiken, S. C. After a period of testing, then finding a source of ingredients and making a product survey, the dressing was produced for commercial markets using the famous inn's name as trademark.

Ingredients include high quality spices, herbs and vinegars balanced with vegetable oils, tomato, and sugar.

Packed in tall cruet-lipped bottles, the product makes an attractive showing on the grocer's shelf as well as on the dining table. Walt Disney designed the colorful trademark—a jockey in yellow waistcoat and red breeches.

FOOD INDUSTRY NEWS

Charges Against Meat Packers Outlined by Justice Department

Claims that Big 4 do not compete against one another and that case tests adequacy of present anti-monopoly laws

THE ANTI-TRUST CASE against the Big Four meat-packers is something more than another move in the "cost-of-living" drive the Administration announced a year ago.

Department of Justice anti-trusters see this one as a test to determine whether anti-trust laws now on the books are adequate to enforce competition on U. S. industry. And they think, too, that they're handing to the next Administration a case that will test its attitude toward monopoly and anti-trust enforcement.

The case charges Armour, Swift, Cudahy and Wilson with an unlawful combination and conspiracy: (1) To keep down the price they pay the farmer for livestock by not competing with one another; and (2) to keep up the price they get for their meat from the consumer by not competing in the sale of meat.

There are other charges, too—of buying up competing companies, and of preventing the growth of independent packers.

When it comes to summarizing the case against the companies, as in the complaint filed in Chicago, the Department of Justice splits the history of the packers alleged conspiracy into two approximate 25-year periods.

For the first 25 years, beginning about 1898, the packer barons fought it out and eventually wound up with an out-and-out monopoly, where the four or five big companies that survived got together regularly to agree on prices, policies, shipments, market territories, sales quotas, etc. This lasted until the 1920s, when the government trust-busters busted the arrangement.

By this time the packing companies had refined their operations and technics to the point where, for the next 25 years—that is, up to now—they've been able to get the same results without actual face-to-face meetings and discussions.

The department attorneys say that the system was perfected to the point where it works smoothly and effectively without anyone having to meet together. Today's identity of prices and policies results in the same lack of competition, in buying livestock and selling meat, as was the case back in the early period when the packers got together in meetings.

The philosophy behind this kind of case against the meat companies springs directly from the recent victories of the Federal Trade Commission in the Cement Institute case and other delivered-pricing cases. The Supreme Court has been agreeing with an expansion of the definitions of collusion and conspiracy to the point where it's collusion if a group of companies all follow identical practices knowing that others in the industry do likewise.

So—the case is shaping up as another one of those in which thousands of pages of evidence will be introduced, as FTC did when it moved against the cement companies to prove the identity of prices in basing point pricing.

In its complaint, the Department of Justice asked that the four meat companies be split up into 14 companies—and even spelled out what plants might go together to constitute the new companies. Actually, though, this suggestion is just a "for instance."

What the anti-trusters say they want to do is this: Break the defendants down into the maximum number of national companies that (1) can operate efficiently with the advantages of national buying and distributing, and (2) still compete vigorously with each other. The theory is that each of these companies should be a strong, integrated outfit.

If the Department should win the courts to its view that a conspiracy and collusion do exist, it then becomes a question as to whether the Department's suggestion about 14 new companies is the way to bring back competition. This part of the case—supposing the government lawyers win the first part—would be a terrific court scrap in itself.

QM Institute Reports New Additions to Staff

FOUR notable additions have been made to the food research staff of the Quartermaster Food & Container Institute for the Armed Forces, Chicago, within recent weeks. George H. Berryman, formerly commanding officer and director of research of the Surgeon General's medical nutrition laboratory, has been named head of the Institute's nutrition branch.

A former faculty member at the University of Illinois, Harry Spector, has been appointed to lead the physiological section of the nutrition branch. Albert S. Henick, onetime member of the research staff of the American Meat Institute, joins the chemical branch. And Jack Mayer, food technologist specializing in seafood products, has been assigned to the animal products branch.

Wide World

GEORGIA FARM PLAN

Cason Callaway is seen here on his 30,000-acre Harris County, Ga., farm, with which he is demonstrating the practicability of starting with poor land and a small investment, and building up to a productive, well-paying farm.

Cereal Chemists Set Annual Meeting Date

THE American Assn. of Cereal Chemists has set the week of May 15, 1949 for their 34th annual convention, and the Pennsylvania Hotel, New York City, is to be the site.

During a visit to New York City early in October, President William Haley conferred with the local arrangements committee, which is under the chairmanship of Oscar Skovholt of Quality Bakers of America, former national president. Tentative plans were discussed at this meeting, and the preliminary work was set in motion.

President Haley also announced that the important program committee would be under the leadership of R. C. Sherwood, Winthrop-Stearns, Inc., 170 Varick St., New York City 13. He emphasized that all negotiations relative to the presentation of papers at the convention should be conducted through Dr. Sherwood, and that all such negotiations are to be initiated as early as possible.

Labor in Small Bakery Outside Scope of NLRB

IN recent decisions involving bakeries and food stores, the National Labor Relations Board has developed a policy that it will not ordinarily assert jurisdiction unless products are actually sold across state lines.

It will be recalled that NLRB declined last winter to handle a case involving Hom-Ond Food stores, a chain operating in Texas, because the business was essentially intrastate, although name brands outside the state were sold.

Since then, NLRB declined to take jurisdiction over Sta-Kleen Bakery, Inc., Lynchburg, Va., which bought more than $600,000 in materials last year, 70 percent of it from outside Virginia. Its sales totalled more than $900,000. The Board is now citing this decision as a precedent in refusing to accept cases involving other bakeries which, though they may purchase flour, sugar and other materials from outside the state, keep their sales almost entirely within the state.

Two board members—James J. Reynolds, Jr., and John M. Houston—dissented to the Sta-Kleen Bakery policy, in which NLRB does not deny having jurisdiction, but simply says it will not exercise it.

Before that decision, NLRB had taken jurisdiction over Riley's Lemon Pies, Los Angeles, to order two elections seeking to remove the AFL teamsters and bakery workers as bargaining agents of the employees.

Neither did the Board hesitate to take jurisdiction over the Phoenix Pie Co., located on the Ohio River at Portsmouth, Ohio. Sixty percent of this company's sales were outside Ohio. It also operates its own trucks in Ohio, West Virginia and Kentucky.

Continued High Output Is Goal Next Spring

MAINTENANCE of high level production of spring vegetables and eggs, also a 17 percent increase in the spring pig crop, are recommended in the Department of Agriculture's 1949 production goals.

Increases advised in spring vegetables include: Beets and carrots, 20 percent; lima beans, 15 percent; snap beans, 10 percent; onions and green peas, 7 percent; and shallots, 5 percent.

Curtailments under 1948 are recommended as follows: spring cabbage, 2 percent; cauliflower, 10 percent; celery, 15 percent; and peppers, 50 percent. Early and late spring tomato acreage remains the same as 1948, except for some reduction in Texas for late spring tomatoes.

The egg goal calls for 425,000,000 hens and pullets on farms by January 1. This would mean retaining on farms about 75 percent of the number held Aug. 1, compared with 71 percent held last year.

The spring pig goal asks for 60,000,000 pigs, 9,000,000 more than the 1948 spring crop. It is estimated that this will require an increase of about 21 percent in sows farrowing, if litters are of average size.

Staley Workers Win Certificate for Safety

TWO DEPARTMENTS of the A. E. Staley Mfg. Co. were recently rewarded for having accumulated 517,380 man-hours without a lost-time accident. At a formal presentation held in the company's main office, Dr. R. E. Greenfield, general superintendent, received the Certificate Award for Safety Record from Charles E. Coons, American Mutual Liability Insurance Co.

Maurice M. Durkee, foreman of the oil refinery department, and A. R. Regal, foreman of the starch drying department, received the certificate in turn from Greenfield on behalf of their departmental personnel, who scored respectively 264,386 man-hours for 39 months without a lost-time accident and 252,994 hr. for a period of 27 months.

To qualify for such an award, an industrial plant or its departments must log at least 250,000 safe hours without a single time-losing injury for twelve consecutive months.

Dean Prescott Heads FI Award Committee

DR. SAMUEL C. PRESCOTT, Dean Emeritus of Massachusetts Institute of Technology and "dean" of American food technologists, has been named chairman of the committee which will select the winner of the 1949 FOOD INDUSTRIES Award. Twenty-five well-known food technologists connected with American universities will serve on the committee with Dean Prescott.

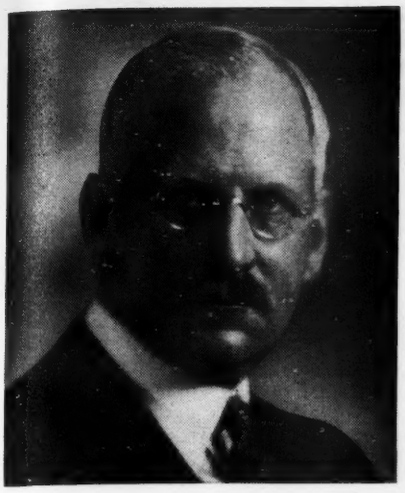
Appointed by the Institute of Food Technologists, the members of the jury of award have just been announced by Dr. H. C. Diehl, president of the Institute. They are listed below.

The 1949 FOOD INDUSTRIES Award is to be made to the food company which, in the opinion of the award jury, has made the most outstanding achievement in food technology since V-E Day. Entries are to be submitted to the Editor of FOOD INDUSTRIES before Jan. 1, 1949, and the winner will be announced at the San Francisco meeting of the IFT next year. Regulations covering the competition were published in detail on p. 92 of July FOOD INDUSTRIES.

This year's award will be the second in the biennial series sponsored by FOOD INDUSTRIES. In 1947, a similar jury selected the Atlantic Cost Fisheries, Boston, for its work in developing an automatic fish filleting machine. On that occasion, a bronze plaque was presented to the winner at the 1947 conference of the Institute, held in Boston.

The 1949 award committee: George L. Baker, Dept. of Chemistry, University of Delaware; C. L. Bedford, Dept. of Horticulture, The State College of Washington; W. V. Campbell, Dept. of Food Technology, Massachusetts Institute of Technology; William V. Cruess, Dept. of Food Technology, University of California; Howard C. Douglas, Dept. of Microbiology, University of Washington; Frederick W. Fabian, Dept. of Bacteriology & Public Health, Michigan State College; Carl Fellers, Dept. of Food Technology, University of Massachusetts; E. A. Fieger, Dept. of Agri. Chemistry & Biochemistry, Louisiana State University; Ira D. Garard, Dept. of Chemistry, New Jersey College for Women, Rutgers University; Ira A. Gould, Dept. of Dairy Husbandry, University of Maryland; N. B. Guerrant, Dept. of Agricultural & Biological Chemistry, Pennsylvania State College; Mathew E. Highlands, Dept. of Food Technology, University of Maine; L. B. Howard, Dept. of Food Technology, College of Agriculture, University of Illinois.

Max Levine, Bureau of Labora-



S. C. PRESCOTT
Heads Food Industry Award Committee

tories, Dept. of Health, Territory of Hawaii (formerly professor of bacteriology, Iowa State College); Walter Maclinn, Dept. of Food Technology, Rutgers University; Henry J. Masson, Graduate School of Engineering, New York University; J. E. Nicholas, Dept. of Agricultural Engineering, Pennsylvania State College; Milton E. Parker, Dept. of Food Technology, Illinois Institute of Technology; W. E. Pike, Dept. of Chemistry, Colorado A&M College; John A. Shellenberger, Dept. of Milling Industry, Kansas State College; George A. Shuey, General Agricultural Chemistry Dept., University of Tennessee; George F. Stewart, Iowa Agri. Experiment Station, Iowa State College; Ernest H. Wiegand, Dept. of Food Technology, Oregon State College; J. G. Woodroof, Dept. of Food Technology, Georgia Agricultural Experiment Station; and W. R. Woolrich, College of Engineering, University of Texas.

Gamma Rays Age Cheese In Less Than 3 Months

FULL-FLAVORED aged cheese has been produced from raw green stock in from six weeks to three months, by a method involving application of gamma rays, according to a recent claim by The Grindrod Corp., Waukesha, Wis.

Two basic steps are involved in the process: (1) An intense high voltage bombardment of the raw cheese with a short ray in the vicinity of the gamma or the X-ray; and (2) compression chamber treatment at 100 lb. psi., during which carbon dioxide gases are forced from the cheese and replaced with oxygen.

Cheese so treated, the corporation claims, was found seven weeks later to be rich in flavor, crumbly in texture, and every bit as aromatic as normally aged cheese.

"LIKE HAVING THREE VALVES IN ONE"

LUNKENHEIMER

150 lb. S.P. BRONZE GATE VALVES

THE enthusiasm of maintenance men *and* engineers for the Lunkenheimer new 150 lb. Bronze Gate Valves is understandable. Actually, a simple interchange of trimmings provides, from minimum stocks, a valve for every spot where a 150 lb. Bronze Gate Valve is needed.

Ruggedly designed throughout, each valve features the Lunkenheimer developed and patented wear-resistant alloy stem material which eliminates failures due to stem thread wear.

Whether you have one . . . or thousands of 150 lb. bronze gate valves in your plant, you'll find definite advantages in the LUNKENHEIMER Fig. 2150 line of 150 lb. gate valves.

PHONE YOUR DISTRIBUTOR

Design, construction and interchangeability are fully illustrated and described in Circular 574. Ask your distributor for a copy or write us direct.

Fig. 2150
DOUBLE WEDGE DISC, RISING STEM

FIG. 2153

Embodies all the features in Figs. 2150 and 2151, but its design is varied to provide non-rising stem operation. Body is the same thus requiring only an interchange of trimmings to convert from the non-rising stem to the rising stem valve.

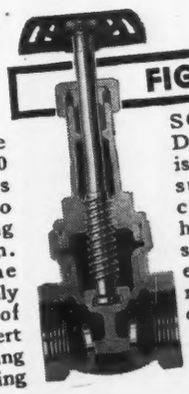


FIG. 2151

SOLID WEDGE DISC. The solid disc is ideal for services such as food processing lines and handling gummy substances, where entrapment of line materials within the disc is undesirable.

See Our Exhibit at the 18th National Exposition of Power and Mechanical Engineering. *Booth #52, Grand Central Palace, N. Y. Nov. 29th-Dec. 4th.*

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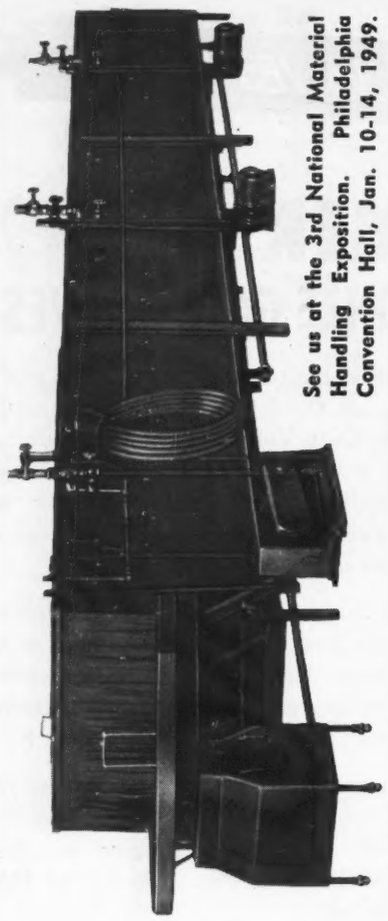

This unit permits continuous operation and eliminates stacking filled and capped bottles for cooling in tote pans, thus saving you extra labor and multiple handling. It is equipped with a variable speed drive to match speed of fillers and cappers.

Handles 3 Types of Processing

1. Pasteurizing, holding and cooling.
2. Holding and cooling.
3. Cooling.

Never out of date. This unit is constructed in 12 foot sections which may be operated independently and additional intermediate sections obtained when required.

Send for Bulletin JC-1

See us at the 3rd National Material Handling Exposition. Philadelphia Convention Hall, Jan. 10-14, 1949.

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Wide World

FOR LIGHT GOODS

Retail bakers may certainly be included among the city deliverers of light goods, to whom this three-wheel truck is recommended. It carries a payload of 500 lb. on its deck, which has 30 cu. ft. of space. And it's to sell for "less than $800."

Candy Technologists Elect Local Officers

LOCAL SECTIONS of the American Assn. of Candy Technologists took form during September, with meetings in Boston, Chicago and New York City.

At the Boston meeting, Charles Carilli, Edgar P. Lewis & Sons, was elected chairman, while Donald G. Mitchell, Walter Baker Co., became secretary-treasurer.

A. B. Cramer, F. & F. Laboratories, was elected to head the Chicago section, with Thomas A. Ryan, Magnus, Mabee & Reynard, as secretary-treasurer. The New York group elected John M. Klein, Mason, Au & Magenheimer Confectionery Co., as chairman, and John C. Clay, National Starch Products, Inc., as secretary-treasurer.

National officers of AACT are: Simon O. Schnitzer, Leaf Brands, Inc., Chicago, president; Velt Stafford, Chase Candy Co., St. Louis, 1st vice-president; R. G. Haley, Brown & Haley, Tacoma, Wash., 2nd vice-president; and Hans F. Dresel, Felton Chemical Co., Philadelphia, secretary-treasurer.

Supreme Court Rejects Hearing on Merit Wage

IN rejecting an appeal of J. H. Allison & Co., Chattanooga, Tenn., meat packers, the Supreme Court has affirmed the right of unions to insist that they have a voice in any "merit" wage increases granted voluntarily to individual workers.

The court declined to review a 2-1 decision of the U. S. Circuit Court of Appeals at Cincinnati, which affirmed a Wagner Act ruling of the NLRB. The Taft-Hartley law did not change this part of the Wagner Act, so presumably the same rule applies today.

In appealing to the Supreme Court for relief, the Allison Co. explained that for 16 years it had been granting wage boosts to meritorious workers without notifying or consulting either the employee or the union—the Amalgamated Meat Cutters & Butcher Workmen, AFL.

In opposing Supreme Court review, the Department of Justice argued that it seriously affected the prestige of unions if they are barred from bargaining on "merit" increases. It also creates resentment and unrest within the union to give wage increases to some employees and not to others, the government lawyers said.

Flies Immune to DDT KO'd With Chlordane

REPORTS that have been coming from various parts of the country concerning the ineffectiveness of DDT to houseflies (*Musca domestica*) have now been confirmed. In Bulletin 742, G. W. Barber and J. B. Schmitt of the New Jersey Agricultural Experiment Station, Rutgers University, New Brunswick, N. J., report on results of applying DDT and other insecticides to an ordinary strain of flies, which for many generations has been exposed to this chemical, and flies reared in the laboratory.

At dosages of 144, 110, and 70 mgms. per sq. ft. of surface, DDT killed only 12 percent of the non-laboratory reared flies after 15 min., while 100 percent of the laboratory reared flies were destroyed. Chlordane and others of the newer toxicants tested, however, gave

approximately 100 percent kill of both the DDT resistant and the laboratory flies at these dosages.

Of the materials tested, Chlordane appears most useful for fly control because of its inoffensive odor and its safety to warm-blooded animals when properly formulated and applied.

Liquid Sugar Storage Serves 5 Food Plants

ONE liquid sugar storage station accommodates five different food manufacturing departments at the Kroger Co.'s plant, in Cincinnati. Installed this fall at an estimated cost of $100,000, five 17,500-gal. steel storage tanks and more than a 1,000 ft. of pipe permit liquid sugar to flow to the company's bottle beverage plant, and to its jam and jelly, candy, baked beans, and salad dressing plants.

About 300 tank cars of liquid sugar per year will be required by the company. These tank cars, especially designed for the job, range in capacity from 6- to 10,000 gal. The latter can be emptied into a storage tank in about 2 hr.

The storage tanks are lined with Lastiglass. The tanks have bactericidal lamps and a ventilating system. As the sugar is needed in the mixing room, a valve is turned to start the sugar flowing, at a rate of 40 gal. per min., direct to the mixing tanks without exposure to air.

Corrections

SEVERAL changes were made in editing the article, "Tests Point Way to Reduce Color Losses in Strawberry Preserves," by Z. I. Kertesz and Ernest Sondheimer (Sept. FOOD INDUSTRIES). Through an oversight for which either the August heat or humidity is the only possible alibi, the revised article did not go to the authors for final checking. So we apologize and list below the changes the authors would have made.—*The Editors.*

Page 107, last sentence of first paragraph in box, Practical Use of These Findings: Change to read, "The rather common practice of cooling to 'about 100 deg. F.', followed by immediate packing into cases, might well be a major cause of the unexpectedly poor color of many products now on the market." Page 108, fifth line of fourth paragraph in first column: Change to read, "inexpensive photoelectric colorimeters." Chemist in photo is using the Beckman spectrophotometer. Page 215, sixth paragraph: should begin, "1. The wavelength of 500 millimicrons is not very sensitive for measuring browning pigments." Page 216, third line: Change to read, "At other storage temperatures, the nonanthocyanin values show definite minima."

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THE PROCESSING PICTURE

New Method Promises Improved Apple Juice

A NEW and better quality apple juice may soon be available as a result of recent work of food technologists. This research has shown the way to retain the original quality of apples, which has previously been lost or impaired.

Addition of vitamin C or ascorbic acid to pomace, after milling and before pressing and storage of finished juices at low temperatures, has proved effective in retaining quality.

"The ascorbic acid should be added during or immediately after milling," according to Dr. Carl S. Pederson of the State Experiment Station, at Geneva, N. Y. "This delays browning long enough for the pasteurization process to be effective."

Low-Cost Method Takes Vitamin P From Citrus

AN ECONOMICAL means of extracting vitamin P from citrus fruit has been perfected by two Florida Southern College scientists. Dr. Boris Sokoloff, noted for his work in penicillin research, and his colleague, Dr. James B. Redd, declared that the processed vitamin material will be available to the public within the next six to nine months.

Large amounts of crude vitamin P material have been produced in a pilot plant at Lakeland and are being purified and standardized by a New Jersey chemical firm.

The two scientists stated that experiments in the laboratory have shown that over-mature oranges and grapefruit possess almost three times as much vitamin P as immature citrus fruit. This relates to the citrus fruit which is normally discarded.

Speed Potomac Action For Pollution Control

GOVERNMENT agencies charged with controlling stream pollution are stepping up their programs—and getting action. Latest example is the progress reported by the Interstate Commission on the Potomac River Basin, composed of pollution officials of Maryland, West Virginia, Pennsylvania, Virginia, and the District of Columbia.

In its last meeting, the group looked over an analysis of a year's sampling of Potomac waters, and then—

(1) Asked the U. S. Public Health Service to initiate a more extensive sanitary survey of the river and its tributaries, and to recommend permanent sampling stations;

(2) Announced a new anti- pollution program to be carried out cooperatively by Maryland, Pennsylvania and West Virginia; and

(3) Reported that Maryland and West Virginia had agreed to work together to decrease or eliminate pollution of the upper Potomac by industry as well as municipalities, through changes in processing and treatment of wastes.

Besides these advances, the commis-

Wide World

LOUISIANA RICE LANDS

A revenue of around $65,000,000 is yielded annually by Louisiana rice lands. Most of this comes from the rice itself, but cattle pastured on the lands account for more than $15,000,000. And if the owner has a daughter and the daughter a friend he can have the indigo grass hand weeded by the kind of help shown here.

sion decided to drive its anti-pollution campaign home to industry by sponsoring industrial-wastes conferences in all basin areas where polluting waste are generated, and by developing a "model area" along the Potomac, which will become an example to stream pollution offenders in the basin.

Mixture in Cool Water Cleans and Sterilizes

A NEW TYPE of compounded mixture, that will both clean and sterilize simultaneously and in cool water, is now available as a result of research at the New York State Agricultural Experiment Station, Geneva. The mixture was designed to simplify the sanitation procedures in food and dairy plants, and it has been found quite effective in the dishpan as well.

According to the report, dairymen who have tried it on milking machines have found that it is extremely effective in getting rid of milk stone, cuts bacteria counts, too. It is a good killer of the heat resistant (thermoduric) bacteria, which have been trouble makers for many years.

George J. Hucker and his associates, who carried on the research with these materials, reveal that they are mixtures of modified nonionic synthetic detergents and quaternary ammonium compounds. Developed during the war, detergents of this particular type can be mixed with other chemical compounds, without a loss in their cleaning efficiency.

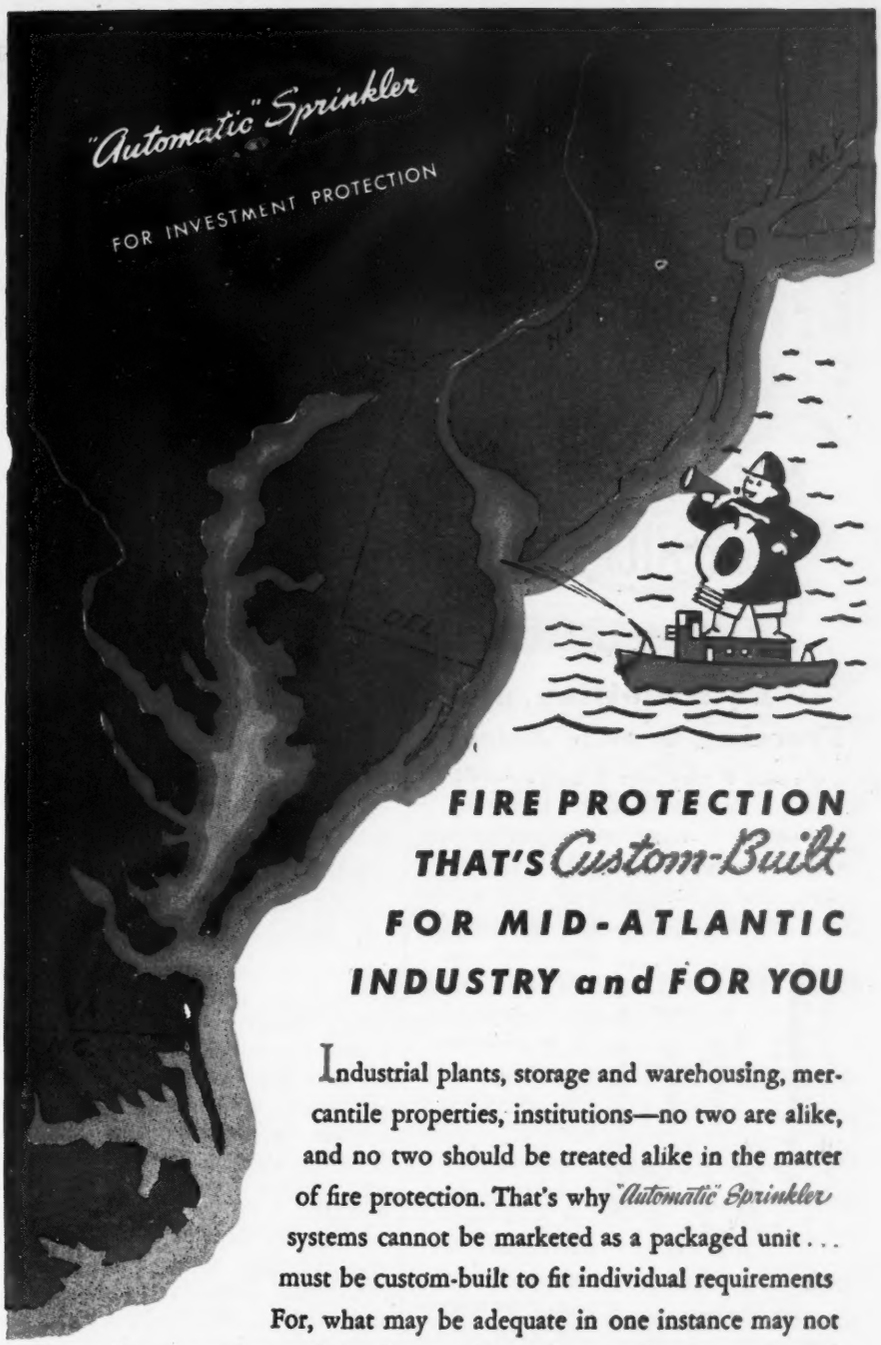
The quaternary ammonium compounds are colorless, odorless, noncorrosive germicides, are not materially affected by heat or light, can be mixed with the nonionic detergents, and are highly germicidal even in such mixtures.

Food Leaders Head Illinois Tech Council

DR. R. C. NEWTON, vice-president of Swift & Co., Chicago, has been elected chairman of a 27-man industry advisory council for the food technology program at Illinois Institute of Technology, it was announced today by Milton E. Parker, professor in charge of the program.

Parker said the Illinois Tech food technology council is the first education-industry group of its type in the nation.

Vice-chairmen of the group are Thomas M. Rector, vice-president of General Foods Corp., New York City, and Victor Conquest, director of research and development for Armour & Company. Parker is secretary of the council. The industry cooperative course is now being formulated.



FIRE PROTECTION THAT'S *Custom-Built* FOR MID-ATLANTIC INDUSTRY and FOR YOU

Industrial plants, storage and warehousing, mercantile properties, institutions—no two are alike, and no two should be treated alike in the matter of fire protection. That's why *"Automatic" Sprinkler* systems cannot be marketed as a packaged unit . . . must be custom-built to fit individual requirements For, what may be adequate in one instance may not be suitable in another, and the factors of hazard, type of construction and effects of possible fire damage must be evaluated in order to determine the best fitted type of protection needed.

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New Process Uses

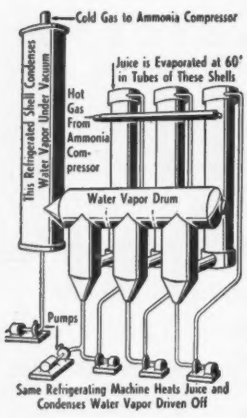
FRICK

Refrigeration

for both Boiling and Freezing Orange Juice!

The plant of the Florida Citrus Canners Co-operative, started in February at Lake Wales, is remarkable because it uses refrigeration instead of steam for concentrating fruit juices.

The cycle shown, on which Mojonnier Bros. Co. of Chicago have patent applications, utilizes both the heat and the cold supplied by a refrigerating machine—and with excellent economy.

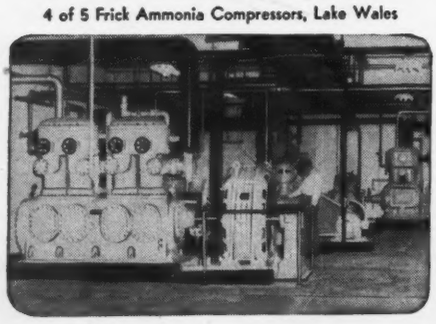

Cold Gas to Ammonia Compressor
Juice is Evaporated at 60° in Tubes of These Shells
Hot Gas From Ammonia Compressor
This Refrigerated Shell Condenses Water Vapor Under Vacuum
Water Vapor Drum
Pumps
Same Refrigerating Machine Heats Juice and Condenses Water Vapor Driven Off

A separate Frick refrigerating system quick-freezes and stores the vacuum - packed juices at ten below zero. Food value and fresh flavor are both retained. Additional Frick machinery to enlarge the plant has recently been purchased.

Let us cooperate in solving your particular refrigerating problems.

DEPENDABLE REFRIGERATION SINCE 1882
FRICK CO.
WAYNESBORO, PENNA. U.S.A.

4 of 5 Frick Ammonia Compressors, Lake Wales



British Combine

BRITAIN'S OLDEST VINE

Over 500 bunches of grapes were cut from Britain's oldest vine this year. Planted in 1768, the vine is carefully tended by a keeper at Hampton Court Palace.

USDA Grade Standard Regulations Are Revised

CHANGES IN REGULATIONS have been adopted for the inspection and grading of processed fruits and vegetables and certain other processed food products. Primary consideration was revision of the fees and charges for this service. Operation under original fees and charges by Production & Marketing Administration has incurred increasing deficits recently as costs have mounted.

The new schedule, which became effective Sept. 16, was established to correct this inequity. Regulations were reprinted in full, beginning on page 5300 of the Sept. 11 *Federal Register*.

Canned green bean and *canned wax bean* grade standards have been revised to conform with the standards of identity and quality for the same products as issued by Food & Drug Administration. Effective date was set at Oct. 2 to conform with the F&DA effective date. Grade standard details were published in the Sept. 25 *Federal Register*, beginning on page 5581.

Canned citrus juice grade standards will not be revised at this time. This decision was made by Production & Marketing Administration on the basis of written comments filed following the proposed revisions published in the July 21 and 22 *Federal Register* (see p. 140 Sept. FOOD INDUSTRIES). This determination was published on page 5531 of the Sept. 23 *Federal Register*.

Frozen pineapple grade standards have been proposed, covering six styles and four grades. These are whole slices, broken slices, crushed, tidbits, and chunks, with "U. S. grades A to D" outlined in the usual manner. Details of determining the grade and ascertaining the rating of each factor will be found on page 5834 of the Oct. 6 *Federal Register*. Written comments in connection with this first issue of frozen pineapple grades by the department will be received until Nov. 5 of this year.

Canned field peas and *canned black-eye peas* will be covered by grade standards if the proposals on page 5530 of the Sept. 23 *Federal Register* are adopted. Provision is made for two styles of canned peas (with or without snaps). Three grades are proposed: "U. S. Grade A" or "U. S. Fancy," "U. S. Grade C" or "U. S. Standard," and "U. S. Grade D" or "Substandard."

The usual discussion of various factors to be considered in ascertaining the grade, and a sample score sheet, will be found in the *Federal Register*. Unusual feature of the proposal is the long period allowed for comments to come into PMA.

Apr. 1, 1949 has been set as the date by which industry comments should be submitted in writing, granting the industry request that the proposed standards be tried out during the present canning season.

Citrus fruit grade standards have been promulgated, as outlined on page 142 of the Sept. FOOD INDUSTRIES.

Effective dates for the various standards were as follows: Grapefruit, Aug. 29 (see page 4787 of Aug. 19 *Federal Register*); oranges, Sept. 14 (see page 5174 of Sept. 4 *Federal Register*); and tangerines, Sept. 18 (page 4790 of Aug. 19 *Federal Register*).

Peanuts in the shell (cleaned Virginia type) are now covered by U. S. grade standards. Effective date was set at Sept. 18 by publication on page 4789 of the Aug. 19 *Federal Register.*

F&DA Food Standards

LATEST reports from the F&DA on food standards follow:

Flour standards were considered briefly in early October, acting on Millers National Federation amendment request to include chlorine dioxide as an optional bleaching and maturing ingredient (p. 105 Oct. FOOD INDUSTRIES). Evidence was introduced into the record to show that this material was a safe processing chemical from the standpoint of toxicity and nutritive properties of the treated flour.

Present at the hearing was Sir Edward Mellanby, whose publication about two years ago questioned the use of nitrogen trichloride in treating flour.

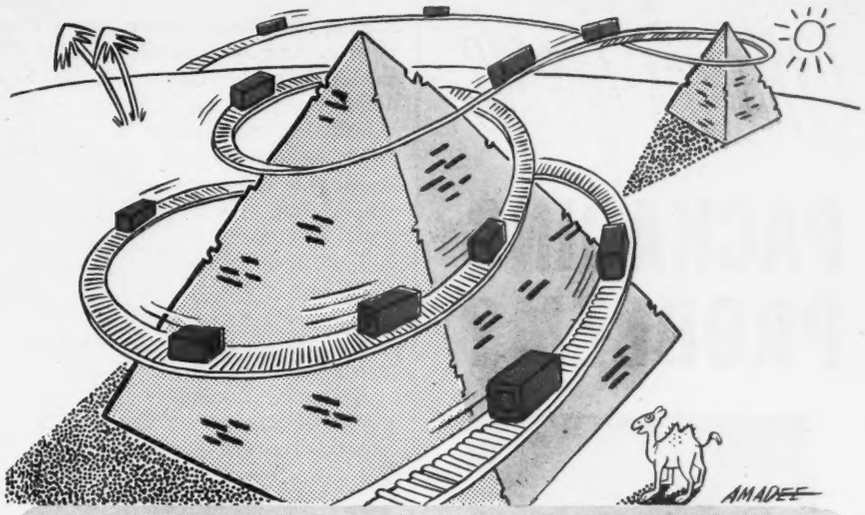
Canned oyster standards of identity were not changed following the supplemental public hearing held in July (p. 140 Sept. FOOD INDUSTRIES). Two of the previously published findings of facts were modified as a result of the hearing, and ten additional findings were published, beginning on page 4663 of the Aug. 12 *Federal Register.*

Four additional conclusions were also reached on the basis of the additional evidence at the supplemental hearing. However, it was ordered by Acting Federal Security Administrator, J. Donald Kingsley, "that no change be made in the definition and standard of identity for canned oysters or in the standard of fill of container established by my final order of Mar. 10, 1948" (p. 142 May FOOD INDUSTRIES).

Cheeses, salad dressings, and *frozen fruits.* Tentative orders on standards of identity for these three were still awaited in early October.

Bread standards hearings have been set to begin November 30. Evidence, according to the October 14 *Federal Register,* will be limited to that which relates to the proposed order of Aug. 3, 1943, and which is not cumulative of prior evidence.

Soft cheese orders appeared on page 5422 of the Sept. 17 *Federal Register.* These include final orders amending the standards of identity for cream



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"We've got to cut handling costs" exclaimed the company President"... and that means a tremendous increase in volume handled. Our plant is on three floors and our products are packed in everything from big crates to small bottles. The problem has about got us licked!"

That problem, with about a thousand variations of course, is met by Alvey experts every day... met successfully, too! Because wide experience in diversified industry has enabled Alvey-St. Louis to specialize in "tough-nut" problems for more than a generation. Alvey can "think through" on difficult assignments because Alvey specialists have "lived through" similar problems throughout industry.

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cheese, neufchatel cheese, and cottage cheese, and a tentative order for creamed cottage cheese (p. 140 Sept. FOOD INDUSTRIES). Effective date of the final orders was set for Oct. 2.

No tentative order was issued because "the effects of curtailed production of fluid milk will be felt by Oct. 1, and will constitute an emergency condition" insofar as the production of these soft cheeses is concerned. Moreover, examination of the record revealed that no controversy appeared to exist.

Federal Security Administrator Oscar Ewing stated, however, that a controversy did exist with respect to the use of concentrated or dried milk products in the manufacture of creamed cottage cheese. It was also found "that there is no urgent need" for amendment of the creamed cottage cheese standards of identity. Accordingly, the proposal to amend that standard was denied. Interested persons were given until Oct. 7 to file written exceptions to that tentative order.

The use of concentrated or dried skim milk in the manufacture of cottage cheese, referred to in the article "Tips for Improving Acid-Type Fresh Cheeses" in the October issue of FOOD INDUSTRIES, *is now permitted under the above orders. Use of concentrated or dried skim milk in creamed cottage cheese is, however, not permissible—The Editors.*

Peanut Butter Stabilizer

A NEW peanut butter stabilizer has resulted from joint research by the National Peanut Council and Procter & Gamble Co. The product, called Fix, is composed of peanut fat and specially prepared salt. It can be accurately proportioned by metering equipment synchronized with the peanut butter milling operation.

R&M Research

"VERY satisfactory progress" is reported on the research projects authorized under the Research & Marketing Act of 1946. The third-quarter meeting of the National Advisory Committee was held in Washington during late September. Reports were received from a number of Federal research groups and also from three State men who were chosen to report on typical projects under various sections of the Act.

Although a number of research contracts have been started with non-government groups, most of these arrangements were completed late in fiscal 1948. Hence results have not yet begun to come in.

New personnel in the Office of the Administrator of the R&M Act include Drs. Barnard D. Joy and Roy Magruder. Dr. Joy, formerly with Extension Service, has been with the R&M group for several months, handling relations with the States, and projects which are functional rather than commodity. Dr. Magruder of Bureau of Plant Industry, succeeding C. O. Bratley who died last May, joined the staff on October 1. He will be responsible for fruit and vegetable projects.

Southern Bakers View Machine Developments

NEW PRODUCTS, methods and production technics were discussed at the Southern Bakers Exposition & Production Conference, in Atlanta, Ga., in September. Approximately 70 exhibitors showed a variety of products, equipment and machinery, many of which, however, were directed to the consumer field.

Exhibits of interest to the industry included: Doughnut Corp. of America, which showed for the first time its new Doco, automatic cutter for yeast-raised dough. It cuts up to 400 dozen doughnuts per hour. This company also showed the new Doco triple control proofer cabinet with automatic control of humidity circulating air and temperature, handling 160 dozen doughnuts per hour. This has 21 cells which hold 84 dozen.

Garden Fruit Specialties Co., Inc., Lakeland, Fla., displayed glazed fruits. It announced it had started packaging for the consumer trade.

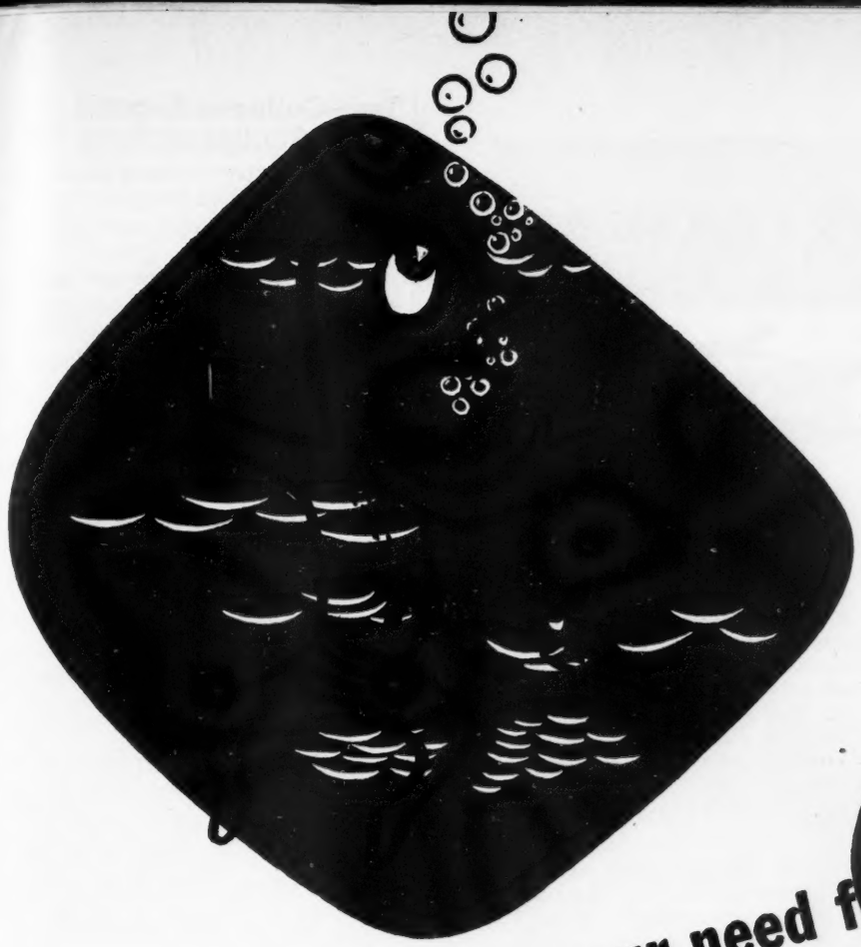
Atlanta Paper Co. displayed its new paper bags, also the corrugated glassine in various colors. A new doughnut bag with glassine window is sealed so that doughnuts will remain fresh.

The Textile Bag Manufacturers Assn. displayed a variety of new-pattern bags for flour—bags made of material which can be reused for household and wearing apparel.

The new proof box displayed by Lester Dow & Co., Atlanta, attracted considerable interest. It comes in sizes for three racks or more.

Malt Liquor

SIMPLIFIED procedure relating to production, removal, bottling, storage, and exportation of fermented malt liquor was the purpose of a considerable number of amendments to the regulations of Bureau of Internal Revenue under Part 192. The effective date of these amendments was Oct. 16. This Treasury Department Decision (No. 5654) was printed in full beginning on page 5370 of the Sept. 15 *Federal Register*.



never underestimate your need f AIR

This fellow did! But someone may save him yet. Perhaps it's his first experience, or maybe he didn't heed the warnings.

Did you ever stop to consider how essential *Air Power* is to your shop or factory? And how Compressors, Air Tools, and air appliances do wear out eventually, or become inefficient in comparison with modern ones?

Have you found so many uses for *Air Power* that your compressors and piping are too small, making your workers use air at low, less-efficient pressures? Remember too, your plant has grown . . . methods have changed.

At present you may be using very little air, or perhaps none at all, but never overlook the tremendous possibilities and advantages of Air Power. *Never underestimate your need for Air.* Call in an Ingersoll-Rand Air-Power Specialist. He can help you.

77-1

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

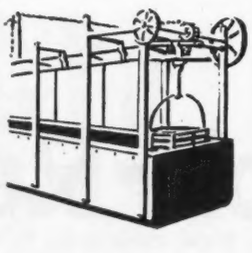
there's also a quicker way to clean your equipment

TIME is too expensive to waste! That's why it's a good idea to concentrate on ways and means of cutting costs by saving valuable time. And you cut costs by saving time when you speed up and simplify plant sanitation procedures with job-proved Oakite cleaners and methods.

Scientifically designed for fast, thorough cleaning, Oakite materials wet the surface being cleaned ... saponify animal and vegetable soils and grease ... dissolve lime-scale ... remove rust and stain ... soften the water in the cleaning solution ... prevent formation of lime soap. Oakite cleaners also rinse freely ... prevent attack on sensitive metals. In a phrase, they remove soils efficiently, economically, safely.

To picture what we're talking about, read these examples of the way Oakite materials are being used to clean faster at less cost.

TO CLEAN COOLING CHANNELS spray on dirt-blasting solution of a recommended Oakite detergent with the Oakite Steam Gun which blends force, steam and detergency. Slime and dirt *roll* off metal or concrete channel walls. Send coupon for details (F-7238 Report) about steam cleaning.



"BEAN SOAKERS EASILY CLEANED", says an Indianapolis user of Oakite Composition No. 63. Before oil and residue from soaking beans becomes foul and threatens product tastiness, they brush on solution of Oakite Composition No. 63. This wets soils, loosens and suspends them in solution for easy rinse-away. Details? Clip and send coupon for Oakite Digest, F-5852.

PROPER SLIPPAGE FOR CHAINS means less glass container breakage—story of savings from hundreds who use Oakite Composition No. 6 as their liquid soap to lubricate conveyor chains. Puts slip where chains and containers need it. Saves power costs by cutting down drag on motors. Also cleans surfaces; that means less downtime for maintenance and repair. Apply by drip or trough methods. Details in F-4422 Oakite Booklet. See coupon.

RECONDITION WIRE BELTS: Often badly rusted belts are marked off as useless. But Oakite customers know that dunking them in Oakite Compound No. 32—acidic type cleaner removes rust, even in hidden joints, swivels. Brings new life to your belts. Send coupon for Oakite 97 Digest for facts on many de-rusting and descaling jobs.

CLEANING DATA FREE
MAIL COUPON TODAY

OAKITE PRODUCTS, INC.
26G Thames St., New York 6, N. Y.
Without obligation, let me have ...

☐ "Digest of 97 Food Plant Cleaning Jobs" made Oakite-easy.

☐ Name of my Oakite Representative.

NAME_____

ADDRESS_____

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Specialized Industrial Cleaning
MATERIALS • METHODS • SERVICE

Two Colleges Expand Studies in Food Tech

MORE intensive investigations and studies in food technology are planned for the future in two of our outstanding universities.

New food products and new uses for present agricultural crops are expected to result from basic and applied research in the new foods building now under construction at the U. of Tenn. in Knoxville.

Under a grant of funds from the National Dairy Council of Chicago, the U. of Wis. is establishing an industrial fellowship for a study of the relation of milk in the diet of experimental animals to the incidence of dental caries. Funds also provided by the American Dairy Assn. of Wis. and the Kraft Foods Co. Chicago will finance investigations into technical cheese manufacturing problems.

Stainless Standards

PROPOSED standards for stainless steel pipe have been issued in tentative form by the American Society of Mechanical Engineers. Co-sponsored by the American Society for Testing Materials, the proposals are based on the same principles that formed the background for the development of ASA 36. They are also to be revised to agree with the proposed revision of B36.10.

DISTRIBUTION

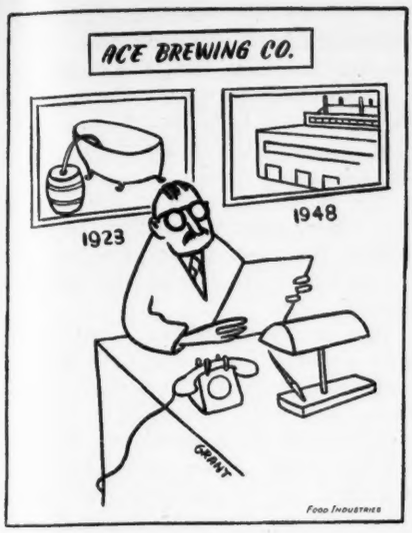
Foreign Grain Buying Set by ECA Program

THE SECRETARIES of Commerce and of Agriculture have been disputing publicly regarding the quantity of wheat that should go to Europe.

Agriculture wanted to get rid of more of the surplus in the Mid-West, which can't be housed safely. Commerce said the plan for early export through the ECA program was too big. The grain industries have been confused by this and other changes in purchase programs.

Seemingly definite is the new plan which divides purchasing and supply or resale under ECA according to the destination. Formerly bought by the Department of Agriculture were both wheat and flour. During the summer flour sales to participating countries were returned to private trade channels.

Comparable action has been taken with respect to all wheat except for Bizonia, Austria, Greece, Trieste, and China. Supplies for those areas, which impose "special distribution problems," will be continued by the Department



of Agriculture even after December 1, the effective date of other changes. Acting as agent of the department will be Commodity Credit Corporation.

Grain dealers handling the commercial transaction are to be governed by an elaborate bulletin which provides the ECA rules for procurement, transport, freight payment, and foreign dealings. ECA remains the supervisory agency to whom reports must be made.

If the President can keep his cabinet officers from public display of their differences of opinion, ECA expects to carry on rather comfortably under this new setup where businessmen transact most of the business for Uncle Sam.

Corn Products Makers Rap "Basing Point" Ban

THE FIRST food products processors to meet the Federal Trade Commission head-on over use of basing point pricing methods have outlined the near-disaster they predict will overtake the industry if they are forced to use only f.o.b. mill pricing.

Here is what eight corn products manufacturers say is going to be the result if FTC attorneys win the case against them, which is scheduled to go into a hearing in November:

1. Some of their important sugar and starch markets will be handed over to foreign competitors.

2. Some small producers in the industry will have to close down their plants; others will find their volume cut back and their costs increased.

3. Bulk of the remaining business will be concentrated in the hands of Corn Products Refining Co., the largest manufacturer in the industry. It has the largest number of plants, and they are so located as to be most benefitted by a switch to f.o.b., if it should come.

This forecast was made by the principal companies involved in the FTC case, which got going back in June

Laboratory Tested and Controlled

TO DO A BETTER SANITIZING JOB

EVERY TIME

The ORIGINAL Quaternary Ammonium Germicide

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This Control No. Guarantees

POTENCY
UNIFORMITY
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Insist on getting only

GENUINE Roccal BRAND SANITIZING AGENT

Reg. U. S. Pat. Off. and Canada

USES IN FOOD INDUSTRY

To Sanitize:

- STORAGE BINS
- FREEZING UNITS
- REFRIGERATORS
- CONVEYORS
- TANKS
- PROCESSING EQUIPMENT
- PACKAGING EQUIPMENT
- TRUCKS
- WALLS AND FLOORS
- WASH ROOMS
- AND AS A HAND RINSE FOR HELP

In the Food Industry, the importance of using only the best in sanitizing methods cannot be over-emphasized.

In Roccal, the *original* quaternary ammonium germicide, the food industry is offered a sanitizing agent that is laboratory controlled and tested. The uniform quality of Roccal means uniformly good results in doing a proper sanitizing job.

Roccal is a powerful germ-killer. In recommended dilutions, it is non-poisonous, virtually odorless and tasteless. It is non-irritating to the skin and no more corrosive than plain water.

Roccal can be used for every sanitizing job in processing and packaging in the following food industries: milk, cream, ice cream, butter, cheese, egg breaking, sugar, fish, poultry, fresh frozen vegetables and fruits, meat products, cereal products, candy and beverage, wherever the product comes in contact with equipment. Also to keep walls and floors sanitary.

Start using Roccal today—you'll find that better sanitation is good business.

SPECIAL MARKETS—INDUSTRIAL DIVISION

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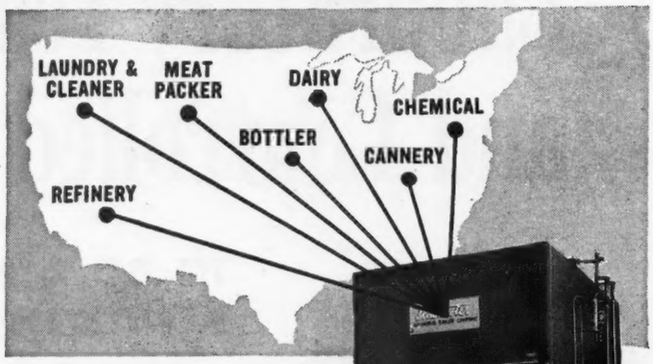
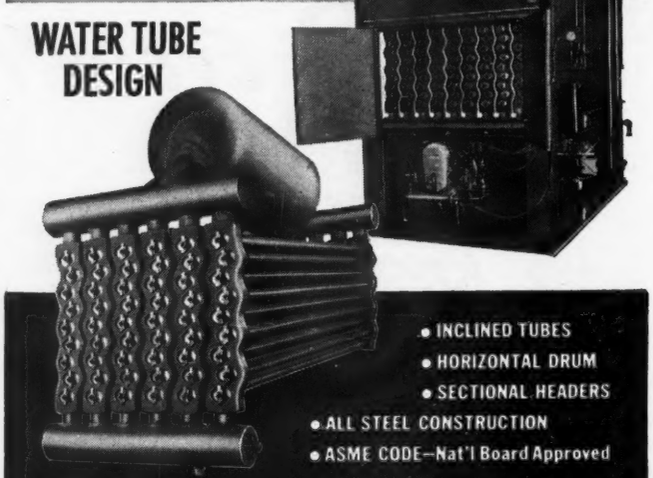
STEAM!

THEY ALL NEEDED . . .



WATER TUBE DESIGN



- INCLINED TUBES
- HORIZONTAL DRUM
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- ASME CODE—Nat'l Board Approved

ALL FOUND THE SAME ANSWER

THE Steamaster

AUTOMATIC WATER TUBE BOILER

● *If you use steam* you'll find that

Steamaster Automatic Boilers now offer so many more advantages and so much more for the money, that your good common sense will find the selection easy. Get the facts . . . compare the value . . . and remember when you order your Steamaster . . .

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ALL BOILERS SOLD F.O.B. YOUR CITY—U.S.A.

Included: Preliminary survey and consultation about your requirements. Freight to your city, anywhere in U.S.A. Complete boiler, assembled with full boiler trim, fully automatic burner, complete return to boiler system, and full electric control panel, completely wired. The boiler is ready to hook up and operate.

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AUTOMATIC BOILER CO.

Compton at Slauson Ave., Los Angeles 11, Calif.

Sales and Service in all Principal Cities

WRITE FOR COMPLETE INFORMATION NOW!

BUILDING BETTER BOILERS SINCE 1915

947. They are: American Maize-Products Co., Anheuser-Busch, Inc., Clinton Industries, Inc., The Hubinger Co., National Starch Products, Inc., Penick & Ford Ltd., Inc., A. E. Staley Mfg. Co., and Union Starch & Refining Co.

The ill effects seen in the FTC's action were cited in a motion the companies filed, asking—for the reasons cited—that FTC dismiss the charges against them.

In a separate statement, Corn Products Refining Co., through its executive vice-president, Howard G. Wascher, declared that FTC's action would result in upheaval and dislocation, not only in the corn derivatives industry, but in consumer industries. The company, he said, would do its utmost to resist FTC's attempt to force upon the corn derivatives industry an illogical and economically unsound system of pricing, which could only have the effect of injuring American farmers, producers and consumers for the benefit of foreign suppliers of raw materials that compete with American corn.

FTC attorneys were quick to reply with a plea that the hearing on the charges—equivalent to a "trial" on the case—begin, as scheduled, during November. FTC attorneys said, in effect, that the corn products firms had completely mis-stated the issue. Said FTC: The two charges concern: (1) Whether the companies are restraining trade and maintaining a monopolistic condition through their maintenance of an unlawful price-fixing combination, and (2) whether they are discriminating in price in order to eliminate competition and maintain monopolistic conditions.

Wide World

GRASSHOPPERS BLITZED

A recent demonstration, near Georgetown, Ky., showed one way of controlling grasshoppers, which have damaged crops in the area. Enterprise Chemical Corp., of Louisville, declared that the Chlordane used in the dusting was deadly to grasshoppers, but not harmful to stock.

Mexico Given Contracts For Meats, By-Products

CONTRACTS have been awarded by USDA to provide for purchase during the current fiscal year of 133,200,000 lb. of Mexican canned meat and meat products for export to foreign countries.

The quantity covered by the contracts represents the major portion of a program, which authorizes during the 1948-49 fiscal year, the purchase of up to 150,000,000 lb. of canned meat from processing plants in Northern Mexico. Included in the 133,200,000 lb. are 118,000,000 lb. of canned meat and 15,200,000 lb. of canned edible meat by-products. The prices provided in the contracts, for delivery to the international border, are 28c. a pound for the canned meat and 18c. a pound for canned edible meat by-products.

Award of the contracts furthers a program started in Nov. 1947 to help provide an outlet for cattle produced in Northern Mexico, export of which was halted because of foot-and-mouth disease found prevalent in other areas of Mexico.

Shows Buying Pattern For Processed Citrus

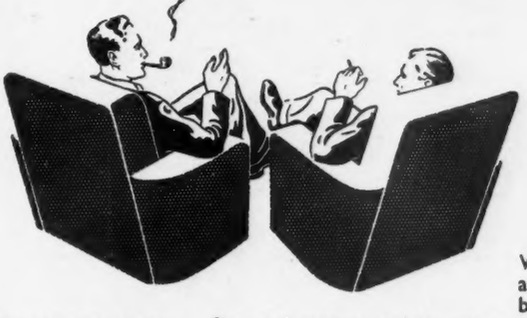
KINDS AND TYPES of citrus juices bought during the 1946-47 season by more than 2,000 chain-store and wholesale-grocer buyers, is covered in a report recently issued by the Farm Credit Administration. The report also shows where and when these juices were obtained.

In answer to the query on what types of citrus juices were purchased, buyers reported that almost three-fourths of their grapefruit juice was unsweetened and more than half of both the orange and blended juice was unsweetened. Approximately one-fourth of the grapefruit juice and nearly one-half of the orange and blended juice was sweetened.

Citrus juice purchases were confined chiefly to canned single-strength juices. Only a small number of buyers mentioned taking canned or frozen citrus concentrates or frozen single-strength citrus juices.

In general, the buying reflected the production pattern. Over 76 percent of the reported wholesale purchases of the three major citrus juices—grapefruit, orange, and blended—came from Florida, which produced slightly over three-fourths of the total U. S. production. Texas, with a production of a little over 18 percent of the total, furnished 16 percent in this survey. California-Arizona, with a 6 percent production figure, showed up as furnishing nearly 8 percent represented here.

"I gained a lifetime's experience —by licking a stamp!"



FOR the cost of a letter to Watford you can have immediate access to information which can be vital to you if you use emulsifiers and want to reduce prices, improve your product or break into new markets.

With this information you can have the best emulsifier for your needs—correctly chosen from the many new types which have recently been evolved for special purposes.

We at Watford have played a leading part in this development of new emulsifiers. In doing so, and by our research work for other manufacturers, it is certain that we have gained knowledge which can be of great help to you. Why not find out? Send your emulsification problems to our Technical Advisory Service—without obligation.

Watford Chemicals include:
PROMULSIN EMULSIFIERS
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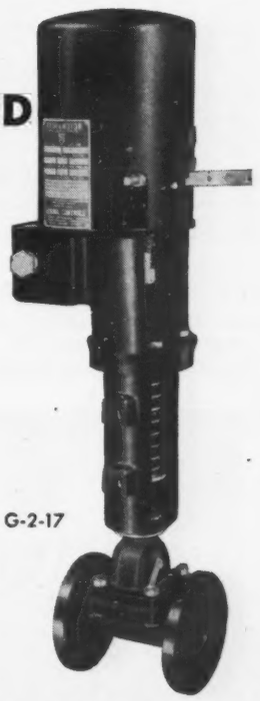
Saunders TYPE
HYDRAMOTOR OPERATED
VALVES



GENERAL CONTROLS G-2-17 and G-3-17 valves for the remote control of chemical solutions, acids and pulpy liquids where a slow opening automatic valve is required.

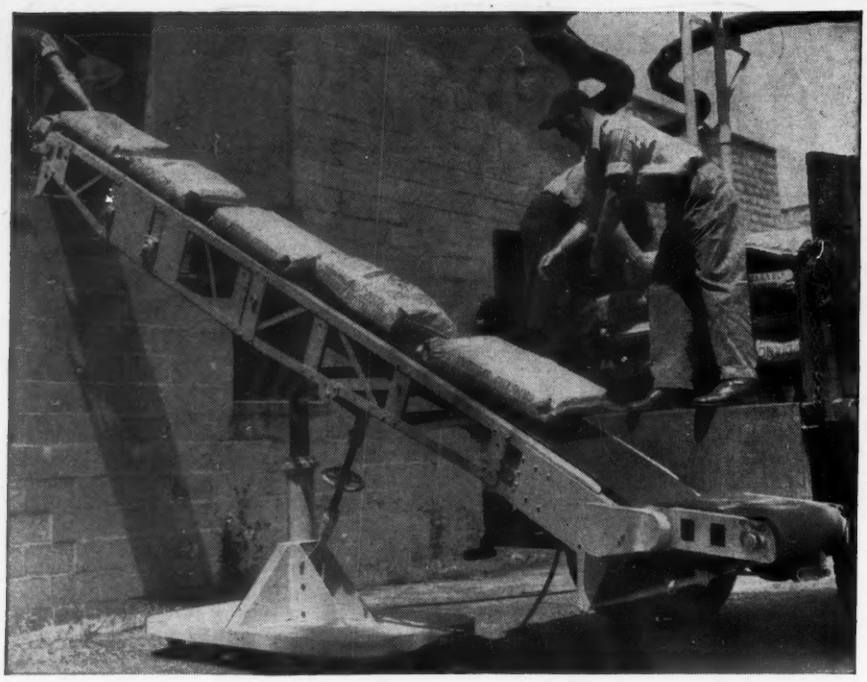
Hydramotor operator has no gears, direct-connected motor-driven pump develops *hydraulic* pressure for direct action against an alloy spring loaded valve stem and seating diaphragm.

The entire hydramotor operator is *sealed in oil for life* to assure constant lubrication, reduction of wear, freedom from dust, grit, and other foreign matter thus insuring trouble-free operation and reduced maintenance costs. Valves have simplified two-wire control circuits, automatically go to closed position on current failure.

FOR COMPLETE SPECIFICATIONS request new Catalog.

GENERAL CONTROLS

FACTORY BRANCHES: — Birmingham (3), Boston (16), Chicago (5), Cleveland (15), Dallas (2), Denver (10), Detroit (8), Glendale (1), Houston (2), Kansas City (2), New York (17), Philadelphia (40), Pittsburgh (22), San Francisco (7), Seattle (1), Oklahoma City (1).
DISTRIBUTORS IN ALL PRINCIPAL CITIES



"... keeps costs down ... frees men for other work ... speeds handling ..." say FARQUHAR CONVEYOR users

SATISFIED users report remarkable savings after they have "Conveyorized" their handling operations with Farquhar. Here are just a few examples:

At a New York pier, nine men formerly were needed to unload fresh vegetables. With Farquhar Freight Conveyors on the job, seven of the nine were freed for other work ... handling costs were cut 50% ... *delivery speed went up 100%.*

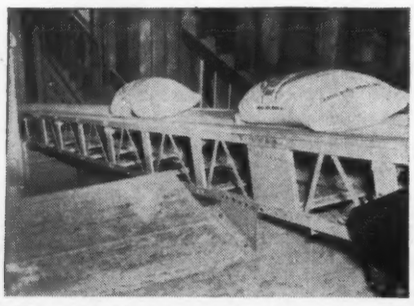
A large paper mill installed a series of eight Model 346 Farquhar Conveyors at a cost of $15,000 to speed up handling of coal from cars to pulverizing plant ... and now saves between $25,000 and $30,000 yearly on trucking charges alone.

A merchant reports his Farquhar Freight Conveyor delivers crates *faster* from trucks to a second floor cleaning room at half the cost of an elevator—and handles twice as many crates.

Hundreds of similar stories from laundries, food processors, grain and feed mills, chemical and paper plants, contractors, warehouses, echo *more man-hours saved ... handling speeded up ... over-all costs reduced* with Farquhar Conveyors.

Whether you stack, pile, load, unload, or move materials from floor to floor ... whether it's bags, bales, boxes, cartons, bundles, any kind of packaged or bulk materials—Farquhar has the right materials handling conveyor to do your job *faster, better, cheaper.* Tell us your handling problem; we'll give you the information you need.

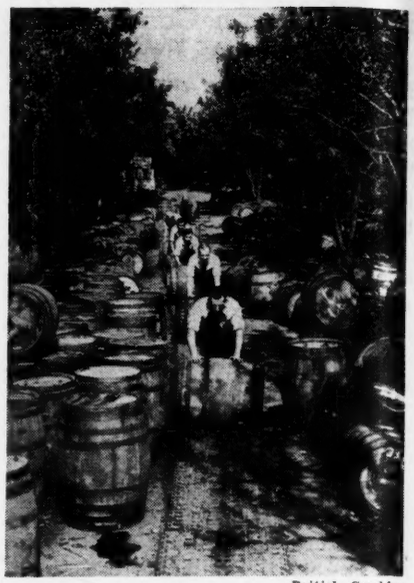
Write for information to A. B. Farquhar Co., *Conveyor Division,* 205 Duke St., York, Pa., or 628 W. Elm St., Chicago 10, Ill.



CUTS MAN-HOURS FROM 32 TO 4 *with Model 431 Farquhar Freight Conveyor (54 feet long, 18 in. belt) unloading cars in hay, grain and feed warehouse. Operation that previously took 4 men one day, now takes one man ½ day, with Farquhar Conveyor help.*

Farquhar
PORTABLE OR PERMANENT MATERIALS HANDLING
CONVEYORS

HYDRAULIC PRESSES • FARM EQUIPMENT • FOOD PROCESSING AND SPECIAL MACHINERY



British Combine

STORED FRUIT PULP

Thousands of barrels of fruit pulp are being stored under the trees in orchards in Kent, England, until they are needed by jam manufacturers. Machinery on this farm can fill 120 barrels per day with pulp and enough preservative to insure its keeping.

Food Surplus Scheme Gets Dewey Approval

A GOVERNMENT-ADMINISTERED joint farmer-processor-distributor program to push sales of surplus crops may be initiated next year if Gov. Thomas E. Dewey becomes President.

The proposal for such a program was presented to Gov. Dewey at the outset of his campaign in mid-September by Albert S. Goss, Master of the Grange. Gov. Dewey did not commit himself finally, but commented that Goss' idea "makes a lot of sense to me."

Goss' scheme involves establishing a federal agency of Presidential appointees who would have the two jobs of: (1) Keeping a continuing, public inventory of production, supply and demand of all farm products, and (2) working out joint marketing arrangements among processors and distributors to push sales of commodities in surplus, and hold back on food items in short supply. Goss would have the agency board consist of members representing agriculture processor and distributor, perhaps the consumer.

As an example of how the agency would function, Goss cited the peach situation a year or so ago. Almost the entire pack of canned peaches was still unsold when the new crop started coming in. A couple of large grocery chains established a special on canned peaches, stocked them alongside the checker, who suggested a purchase to each customer. Within three weeks, according to Goss, the entire surplus was sold.

How insulation can protect your profits

A few years after you build your low-temperature space, a good insulation job really starts to pay off in a big way. That's when good insulation keeps your cost of refrigeration comfortably low, while poor insulation allows it to climb month after month, often ending with costly repair or replacement.

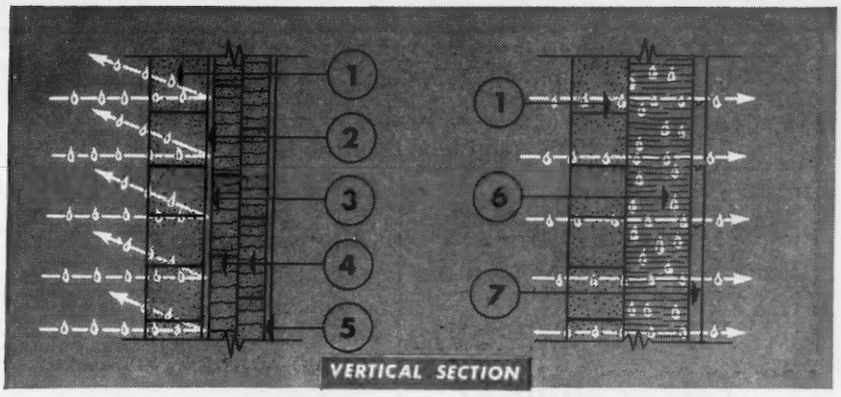
Why does a poor insulation job fail, and how does a good one avoid the same fate?

Good insulation stays dry. It's naturally moisture-resistant, and its installation is engineered to keep moisture out. Poor insulation absorbs moisture, greatly reducing its resistance to heat flow. That moisture may eventually freeze and damage the entire insulated construction.

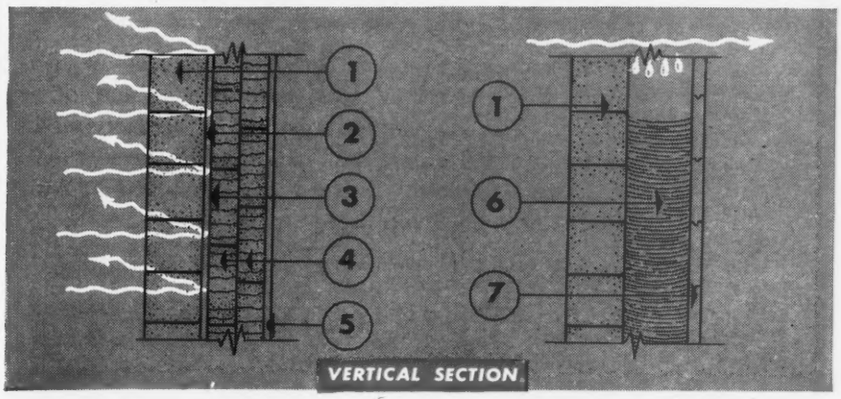
Good insulation does not settle. It is rigid and cannot pack down, leaving space at the top of a wall where heat pours through and condensation and ice formation occur.

Good insulation is strong. Strong, board-form insulation is a structural material that can be used to build free standing walls and partitions of solid insulation economically. In these applications, the moisture resistance of good insulation protects against warping and bellying that occur when poorly insulated interior walls "ice up," bulge, and damage their supporting structure.

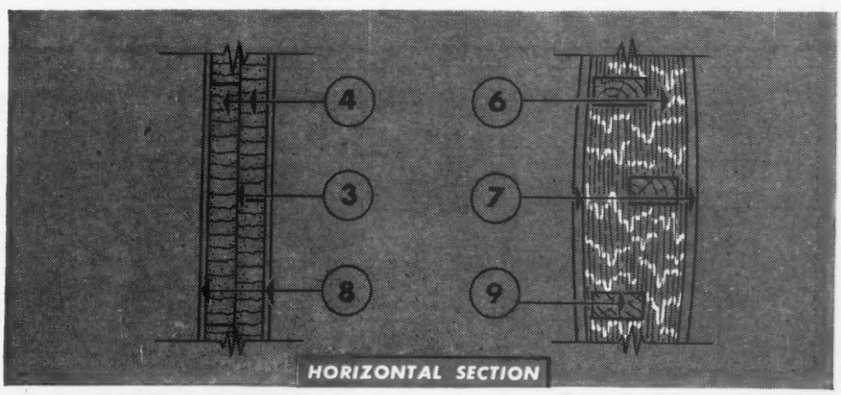
Before you build or enlarge any refrigerated rooms, it will pay you to get advice on insulation from an Armstrong engineer. There's no obligation. Call the nearest Armstrong district office or write direct to Armstrong Cork Company, Industrial Insulation Department, 4211 Concord Street, Lancaster, Pa.



Good insulation stays dry — Poor insulation absorbs moisture



Good insulation won't settle — Poor insulation packs down



Good insulation makes a long-lasting partition — Poor insulation may "ice up" and damage supporting construction

1 EXTERIOR WALL	6 POOR INSULATION
2 BACK PLASTER	7 WOOD SHEATHING
3 ASPHALT	8 PORTLAND CEMENT PLASTER
4 ARMSTRONG'S CORKBOARD	9 2" x 4" STUDS
5 FINISH	

ARMSTRONG'S INDUSTRIAL INSULATION

Complete Contract Service For All Temperatures

From 300° Below Zero — To 2800° Fahrenheit

Frankly, we *don't* know all the answers when it comes to enzymes in food. But we *do* have ideas about enzymes and how they can help you develop better processes, better products, and better yields in the following industries:

Enzymes...
A WAY TO IMPROVED FOOD PRODUCTS

Meat—Milk—Cheese—Vegetables—Fruit Juices and Concentrates—Wines—Milling (flour, cereal, baking)—Distilling—Brewing—Chocolate

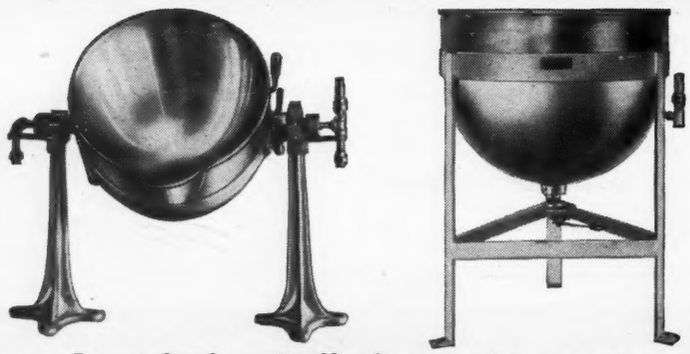
. . . and we'll be happy to suggest possible ways and means of solving your specific problem.

For example, Starches can be solubilized or converted to sugars in peas, corn, wheat and other grains. Proteins can be modified or hydrolyzed in meat, animal intestines, lactalbumin, or legumes. Pectins can be hydrolyzed in wines, fruits, fruit juices or concentrates.

Let us help you find the right answer. Write or phone:

ROHM & HAAS COMPANY
Special Products Department
WASHINGTON SQUARE, PHILADELPHIA 5, PA.
Manufacturers of Chemicals Including Synthetic Insecticides . . . Fungicides . . . Plastics . . . Enzymes . . . Chemicals for the Leather, Textile and other Industries

FOR EVERY PROCESSING NEED
LEE Kettles
WHERE CORROSION-RESISTANT EQUIPMENT IS NEEDED



Descriptive Bulletins on Request

LEE METAL PRODUCTS CO. INC.
416 PINE STREET . . . PHILIPSBURG, PA.
ALL LEE KETTLES ARE MADE TO A.S.M.E. CODE

The Trained Retailer Offers Better Produce

REDUCTIONS in spoilage and waste in the marketing of fresh fruits and vegetables, also larger sales and better-quality produce for the consumer are reported as results of experimental training program for retailers, conducted under the Research & Marketing Act of 1946.

In the training program, classes are being given by the United Fresh Fruit & Vegetable Assn., under contract with the U. S. Department of Agriculture. About 630 classes have been held, and more than 5,800 persons in the retail trade in 34 cities have taken the instruction since the program started in Nov. 1947.

USDA's Support Eggs Are Offered for Export

THE Department of Agriculture is offering 11,000,000 lb. of dried whole eggs, purchased for price support this year, for sale in export channels to foreign governments, to international relief organizations, and to commercial exporters.

This represents the initial offering for sale of dried eggs acquired by the Commodity Credit Corporation this year through its mandatory price-support purchases in the Midwest surplus producing area.

SCHEDULE OF EVENTS

November

4– 5—American Butter Institute, 40th annual meeting. La Salle Hotel, Chicago.
4– 5—American Society for Quality Control, 3rd mid-west conference, Sherman Hotel, Chicago.
15–17—American Oil Chemists Society, fall meeting, Pennsylvania Hotel, New York City.
15–17—Grocery Manufacturers of America, 40th annual meeting, Waldorf-Astoria, New York City.
15–19—American Bottlers of Carbonated Beverages, 2nd postwar international exposition, Convention Hall, Atlantic City, N. J.
23–25—Southern Ice Cream Assn., annual meeting, Roney Plaza Hotel, Miami Beach, Fla.

December

1– 3—National Assn. of Manufacturers, 53rd congress of American industry, and annual meeting, Waldorf-Astoria, New York City.
1– 4—Refrigeration Research Foundation, southeastern training conference for warehouse personnel, Thomas Jefferson Hotel, Birmingham, Ala.
5– 8—American Society of Refrigerating Engineers, 44th annual meeting, Statler Hotel, Washington, D. C.
8–10—Northwest Frozen Foods Assn., Olympic Hotel, Seattle, Wash.

January, 1949

10–14—American Society of Mechanical Engineers and Material Handling Institute, 3rd national exposition and ASME conference, Convention Hall, Philadelphia.
11–14—National-American Wholesale Grocers Assn., Atlantic City, N. J.
14–20—National Canners Assn., 42nd annual convention, Convention Hall, Atlantic City, N. J.
15–19—Canning Industry & Supplies Assn., annual exhibit, Convention Hall, Atlantic City.

Changes in Food Supplies

Production

Creamery butter production, in August, was estimated at 117,685,000 lb., ½ percent larger than the Aug. 1947 output. This was the first monthly gain over the previous year since July 1947, and was only 16 percent below the 1942–46 August average.

American cheese production, estimated at 88,060,000 lb., in August, was at the highest level for the month on record. The July-August decline was only 8 percent, compared with 22 percent last year, and an average decline of 12 percent for the recent five-year average. Production was 8 percent above the five-year average, though only fractionally higher than the previous record output for the month, established last year.

Ice cream output, in August, was only 63,410,000 gal., 17 percent below the Aug. 1947 production. This was still 10 percent larger than the 1942–46 average for August, however. The July-August decline was 10 percent, compared with a 3 percent gain last year, and a drop of 12 percent in the five-year average.

Nonfat dry milk solids production reached 50,700,000 lb., in August, a gain of 3 percent over Aug. 1947. Production of canned evaporated milk was the second largest for August on record, exceeded only in 1945, when an all-time peak for the year was established. Condensed whole milk output, on the other hand, declined in August to 16,800,000 lb., a decrease of 7 percent from the August total for last year.

Liquid egg production, in August, came to 31,772,000 lb., compared with 21,676,000 lb. produced in Aug. 1947. Dried egg production totaled 5,926,000 lb., in August, compared with 1,324,000 lb. produced in August, last year. Frozen egg production, estimated at 7,545,000 lb., was 51 percent under Aug. 1947.

Wheat flour produced in July totaled 24,179,000 sacks, 6 percent more than the 22,827,000 sacks turned out in June. Production, however, was slightly under the 24,917,000 sacks produced in July 1947.

Poultry canned or used in canning during August was estimated at 11,502,000 lb., about double the amount used during the same month last year. The quantity used in the first eight months came to 97,400,000 lb., which compares with 54,357,000 lb. for the same 1947 period.

Salad **dressing**, mayonnaise, and related products reached the highest production level in history during 1947. Total output is estimated at 79,300,000 gal., an increase of about 21,400,000 gal., or 37 per cent over 1946.

Dry casein production was 925,000 lb., in August, a 70 percent decline from a year earlier and a 41 percent decrease from the five-year average. This was the lowest output for August in 25 yr., except for 1945. Manufacturers stocks, on the other hand, were estimated at 3,500,000 lb., on Aug. 31.

Materials

Sweet corn for processing prospects dropped about 3 percent during August, although Sept. 1 indications of 1,212,700 tons were still 14 percent above last year's actual output of 1,066,400 tons. This year's forecast is also 18 percent above the recent ten-year average.

Beet production for canning was indicated at 79,700 tons on Sept. 1, which would be about 11 percent above last years harvest, but well below the ten-year average of 115,080 tons.

Lima bean crops for processing were indicated at record highs on Sept. 1, the forecast being 61,810 tons. This is 11 percent above last year's output and almost doubles the ten-year average.

Storage

Frozen fish and shellfish held in storage on Sept. 1 totaled 135,927,863 lb., close to 8,500,000 lb. more than was held on Aug. 1. The holdings were also 2 percent above those on Sept. 1, 1947. The largest increases over the previous year were in rosefish and flounder fillets and shrimp, while the decreases included tuna, croaker and mackerel. It was estimated that Oct. 1 holdings would reach 140,000,000 lb.

Index

Business Week's index of business activity stood at 195.8 for the week ending October 9, which compares with 195.3 for the preceding week, 193.2 a month previous, and 189.2 a year ago.

CONSTRUCTION

	Pending (thousands)	Total Awarded October (thousands)	Total Awarded 1948 (thousands)
Bakery	$75	$90	$9,645
Beverages	3,999	68	15,092
Canning and Preserving	70	....	320
Cold Storage	....	....	1,549
Confectionery	75	....	2,335
Grain Mill Products	445	70	10,617
Ice, Manufactured	....	....	70
Meats and Meat Products	246	....	2,417
Milk Products	200	283	6,416
Miscellaneous	458	470	14,900
	$5,568	$981	$63,361

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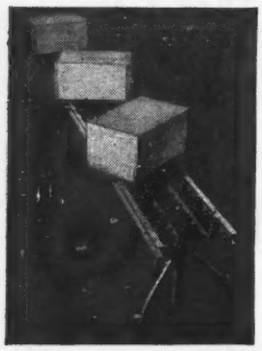

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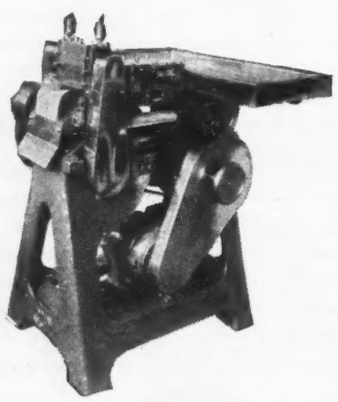

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What Washington Thinks

By R. S. McBRIDE, Washington, D. C.

WAR AHEAD?— Every visitor to Washington asks, and every Washingtonian when traveling is asked, "Will we have war?" Actually, Washingtonians know no more about it than the rest of the country. They only hear more of the commotion. Even the highest officials are no better informed than the man who exercises a measure of discrimination in his reading of his daily paper and in his listening to the radio broadcasters. The most significant fact in Washington is that the situation is bad enough that nobody tries to make politics out of it.

"JUST PEANUTS"— Is a phrase which means something small in the slang of today. But the bobby-soxers who use it, if they still do, ought to know that peanuts milled for oil or nuts each year add up to a big business.

The production reported by Department of Agriculture of shelled edible peanuts for the last season was 747,000,000 lb., a slight increase above the year before. Of these, currently 60 percent go into peanut butter, 25 percent into salted peanuts, 14 percent into candy, and 1 percent into "other uses." The peanut butter in turn goes largely for direct consumption; but about 10 percent of it is used by confectioners, and 6 percent as a component of other manufactured foods. Yes, it all sounds like something more than "just peanuts."

NATIONAL PLANNING—A new agency is now undertaking the job of national planning for emergency. This is the National Security Resources Board. Its technical divisions are surveying past surveys and undertaking to get some sort of coordination.

Their real undertaking can be expressed almost mathematically. The equation is something like this: A plus B equals C plus D. A is armed forces demand; B is business (nonmilitary) demand; C is capacity to produce; and D is deficit in supply. When the size of the deficit is known, then NSRB undertakes to find means of enlarging supply to make deficit zero. Food executives asked to work on supply problems will be helping to solve this equation.

"BRAIN FOOD"—American consumption of fish and fish products has been growing steadily during the past 20 years, except during the war period, when supplies were not adequate. Currently, fish and fishery products for food run to a total of about 1,333,300,000 lb. per year. It looks as though these products will continue to prosper, even being supported somewhat by large military purchases during some periods. Also there's a constantly growing demand for the elaborately processed fishery products. The high price of beefsteak undoubtedly has something to do with all this.

EGG WASHING— Old fashioned ways of cleaning eggs are taboo if flavor and sanitary conditions are to be met. Latest methods require use of synthetic detergents—the "soapless soaps"—in hot water up to 160 deg. F. So washed, the egg gets warm enough so that air coming through the shell expels the contaminating bacteria from the shell pores. Cold-water washing merely drives these bacteria into the egg, accelerating the decline of both palatability and keeping quality. It looks as though a technologist is going to have to be put in charge of the egg farm as well as the egg-processing plant.

PLANT LOCATION—If food industries are to locate new plants or relocate old ones, an extremely important part of a site survey deals with public services. Among needs which should be noted early in such planning are water supply, power, sewage disposal, gas and fuel delivery, and of course rail and highway transportation. In many cases, cities, counties, and even

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states are making a special effort to increase the availability of these essentials for their particular areas. Even the federal government comes in occasionally with money to support new location projects. So the apparent lack of an essential facility should not preclude consideration of a new site —because Uncle Sam or some subsidiary jurisdiction may be willing to help provide the needed facility.

SELLING RESEARCH—Once a research project is done, the results have little value until sold to somebody who will put them into use industrially. Food technologists know this, but sometimes academic researchers do not. Hence the new plan started jointly by the Land-Grant Colleges and the Department of Agriculture is quite significant. The Extension Services of both federal and state groups are going to work to secure improved practices that will apply research results of both. It sounds like a good idea.

PLENTY OF PEPPER—Building of the strategic materials stock pile is one means of reducing expectable shortage in wartime. Purchases currently for the stock pile include a number of industrial commodities of which vegetable fats and oils are the most significant food items. Also being bought currently for this reserve storage is 1,000,000 lb. of pepper.

The largest single requirement for the stock pile is rubber. But American ingenuity has developed synthetic rubber to the point that wartime deficits offer much less of a threat than even two years ago. We are not expecting a comparable synthetic vegetable oil or synthetic pepper. But you never can tell!

WHO PAYS?—Everybody knows that freight rates have been advanced substantially within the last year. Most of us have not discovered the extent to which the percentage applies on the average throughout the country. Official analysis by Interstate Commerce Commission indicates that the average increase for all commodities has been 23.3 percent. The new l.c.l. traffic burden has been about 25 percent; the products of mines are only 17.8 percent up. But animals and products, agricultural products, and most other groups are going to bear about average increases from 21 to 24 percent as compared with a year ago.

FOOD TECHNOLOGY— Washington was handed definite and emphatic notice that there is such a thing as food technology. It was quite a shock to many groups to find that a man like Dr. Louis B. Howard should leave a position as bureau chief to take up the important job of developing food technology at the University of Illinois. This one episode may do more to sell official Washington on the importance of the field than all of the talk that has gone on previously.

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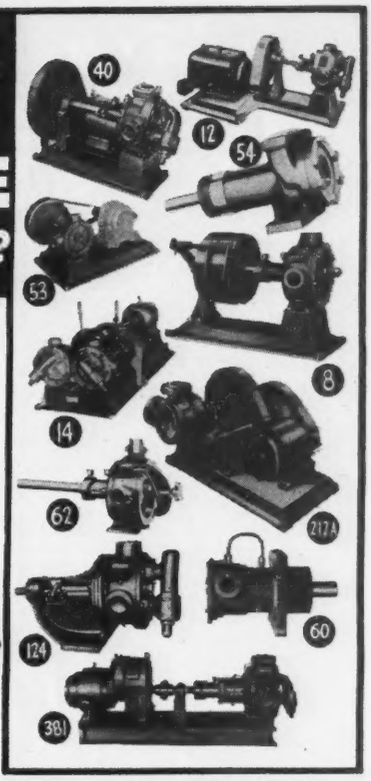

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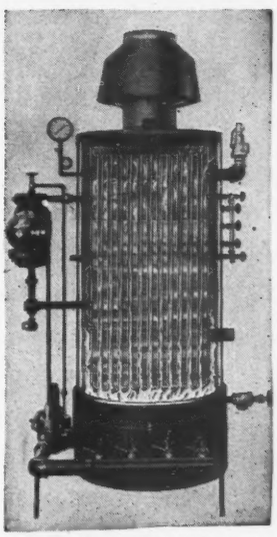

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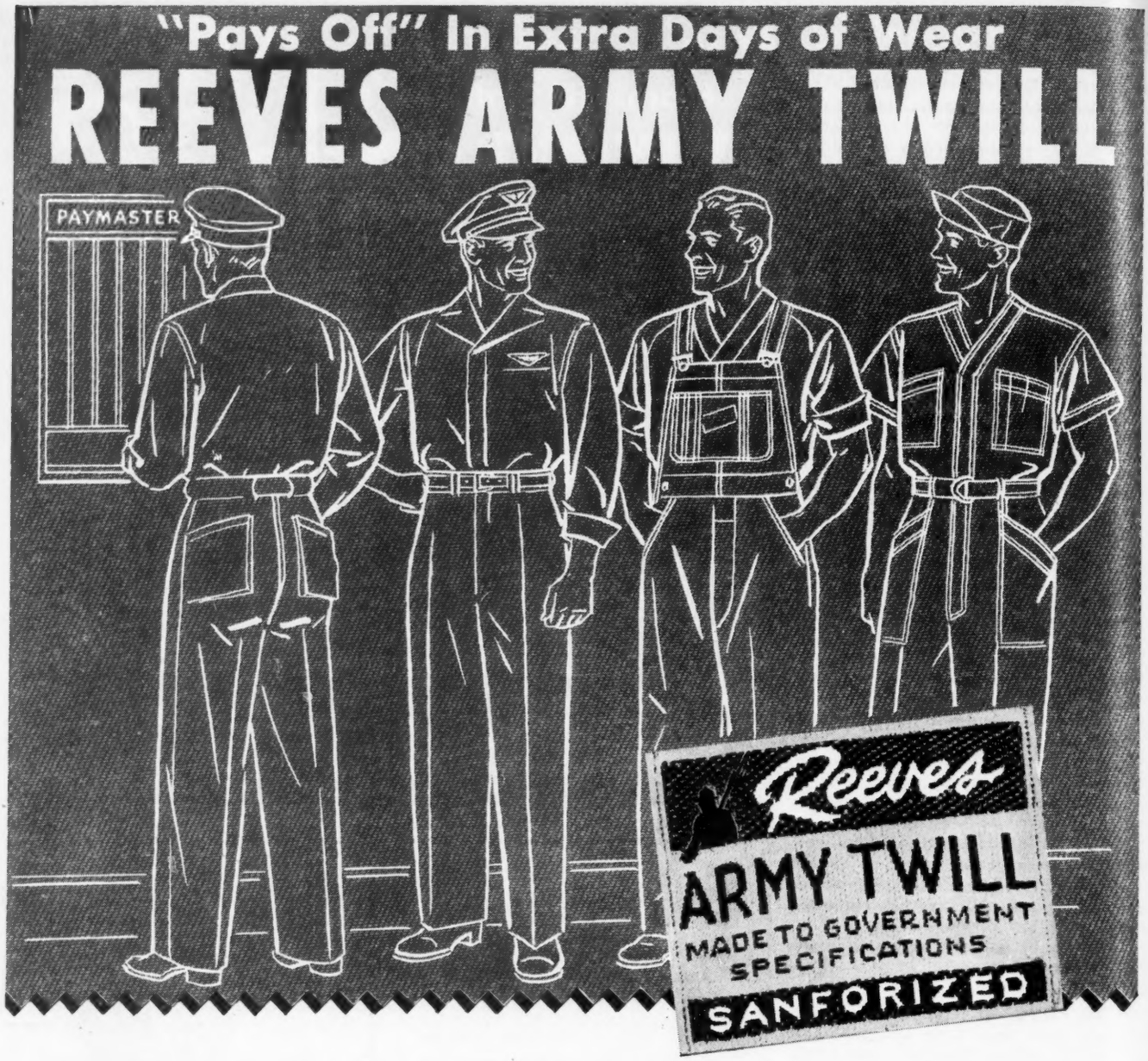

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INDUSTRY

Anheuser-Busch, Inc. has been issued a building permit for the construction of a 5-story, 105x306 ft. reinforced concrete, brick and steel stockhouse in St. Louis. Estimated cost: $1,500,000.

Blevins Popcorn Co., Nashville, Tenn., has completed installation of new packing equipment and is now in production of popcorn in 10-oz. cans. Firm recently announced purchase of Ohio Popcorn Co., Arcanum, Ohio.

Borden Co. made another step in a long range plan of diversification when its $3,000,000 soybean oil extraction plant at Kankakee, Ill., was recently completed. Company also announced consummation of a 10-yr. lease with the Spears Dairy of Houston to include all equipment of the Houston and Beaumont plants in addition to the La Grange and Rusk receiving stations.

Bowling Green Provision Co., a recently chartered corp. in Bowling Green, Ohio, has started federally inspected meat packing operations in plant formerly occupied by Ruedy Packing Co.

Capital City Products Co., Columbus, Ohio, has launched a $250,000 program in the industrial chemical field to include construction of a $40,000 plant addition to house equipment for distilling free fatty acids.

Kimball Food Products Co., Fort Worth, has purchased the Border Packing Corp. of Weslaco, Tex.

Meeker Sugar Refinery, Alexandria, La., has been purchased for $400,000 by a co-operative of central Louisiana citizens and business firms.

National Biscuit Co. has started construction of a new $750,000 bread bakery in Cleveland.

J. A. McCurdy, seed firm near Evansville, Ind., has begun a program of improvement for its "Pop Corn City" to include twelve 5,000-lb. storage bins equipped with a natural forced fresh air drying process.

River Valley Packing Co., Inc., has started vegetable canning in a plant recently acquired from the RFC at Atkins, Ark.

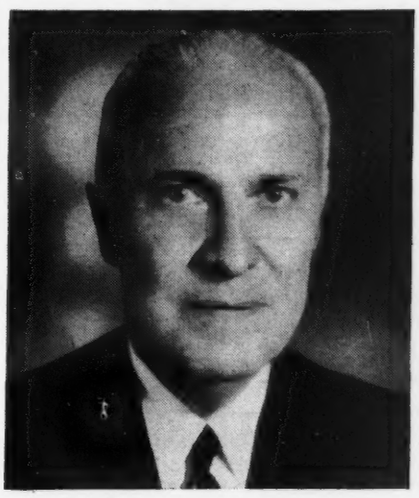
Swift & Co. is reported to have purchased the plant of Cook Packing Co., Inc., Scottsbluff, Neb., and also a 10-acre site on the Indian River near Norfolk, Va., for the erection of a proposed $1,000,000 packing and slaughterhouse. Moreover, company has begun construction of a four-story packing plant at Cleveland to replace five existing buildings.

Southern Cotton Oil Co., a subsidiary of Wesson Oil and Snowdrift, has announced plans for construction of a new shortening manufacturing plant at Gretna, La., to cost over $1,000,000.

A. E. Staley Mfg. Co.'s 42nd annual report has been judged by **Financial World's** Annual Report Survey to be the best 1947 report to stockholders and employees in the milling industry.

SANITARIANS WITH AIB

Formerly inspectors with the U. S. Food & Drug Administration, Lloyd J. Salathe (left) and Dr. W. Parker Pierce (right) have joined the sanitation staff of American Institute of Baking, Chicago. They will assist in conducting the in-plant training program.



H. J. HOWLETT

Secretary of the American Management Assn. for the past 13 yr. and a director of the AMA's National Packaging Exposition, he has resigned to become president of Container Laboratories, Inc., succeeding the late E. A. Throckmorton, Jr.

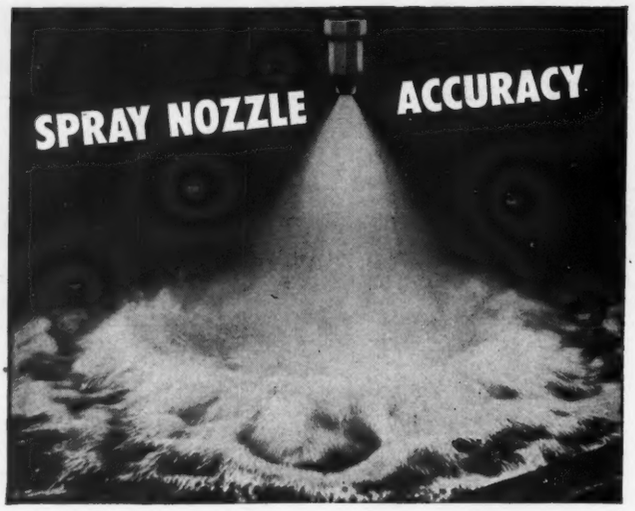
VERNON C. PRASCHAN

Chief chemical engineer of Clinton Industries, Inc., and a specialist in high vacuum engineering, he has been transferred to firm's subsidiary, Snow Crop Marketers, and will supervise production of orange juice concentrate.

Puritan Co. of America has started construction of facilities on the Chicago River for the unloading of olives shipped from Spain and barged to Chicago via the Mississippi River.

Fire Losses:—The National Biscuit Co. plant in Dallas, Tex., damaged to the extent of $75,000 . . . Eagle Mill & Elevator, Higginsville, Mo., destroyed with loss estimated at $200,000.

Nestle's Milk Products is making preparations for moving its Stamford, Conn., offices and New York City headquarters to Colorado Springs. Plans include housing for over 200 employees.



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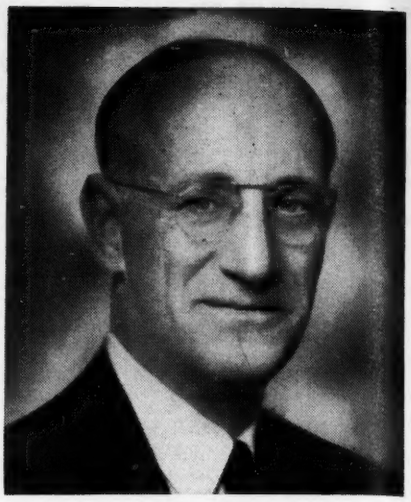

CLARENCE FRANCIS

Chairman of board of General Foods Corp., he has accepted chairmanship of Associates, Food & Container Institute. This nonprofit organization, comprising 200 companies, institutions and individuals, was recently formed to cooperate with Armed Forces in food and container problems.

PERSONNEL

Dr. Karl J. Brunings, formerly associate chemistry professor at Johns Hopkins University, has joined the research dept. of the Brooklyn, N. Y., plant of Chas. Pfizer & Co., Inc. Other additions to the research staff include R. Carboni and I. J. Friedman of Columbia University.

Josiah Ferris, Jr., vice-president of United States Sugar Corp. for the last 12 yr., has announced his resignation, effective Oct. 31. He is credited as the first man to negotiate a contract with the Jamaica and Barbados governments for the use of foreign labor by individual farmers and companies.

Matthew E. Highland, associate food technologist at U. of Maine Agricultural Experiment Station, is in Berlin, Germany, at the request of the U. S. Army to study bizonal facilities for preparing pre-cooked foods. Authorities are studying possibilities of supplying the Russian-blockaded city with precooked foods in order to conserve fuel.

Whittaker Lonsdale, formerly assistant to Ellsworth Bunker, who is now chairman of the board of National Sugar Refining Co., New York City, has been appointed executive vice-president of Sterling Sugars, Inc., Franklin, La.

C. C. MacLachan, president of the Maple Leaf Milling Co., Ltd., of Ottawa, Ontario, Canada, has been named a director of the Canada Bread Co., Ltd.

W. K. McCracken has been re-elected president and general manager of the

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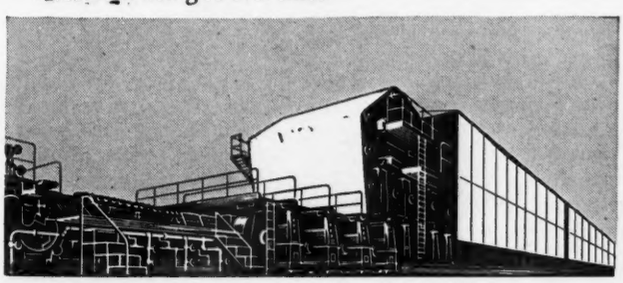

WE WANTED A NAME for this new machine—as fitting as that of her brother, "The Big Swede." So we conducted a contest. We knew many of our friends would join the fun, but we were quite unprepared for the overwhelming response—the flood of warm-hearted well wishing we received from the paper using trades and public alike. We thank you all for helping us, and we hope you like the name the contest produced for the new girl. RIPCO MAID heads up a vast expansion program which makes our capacity for tonnage, service, and quality unequalled.

A contest report will be sent to all who participated and to anybody else who writes for a copy.

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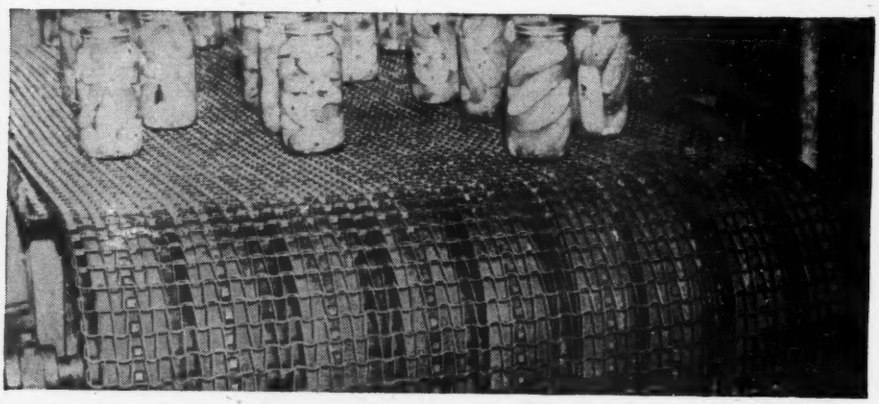

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UNITED STATES STEEL

G. F. MASON

After 45 yr. of service, he has retired as west coast regional manager of H. J. Heinz Co.'s manufacturing division. He was first chemist hired by the company and aided materially in developing scientific research and quality control methods.

TreeSweet Products Co., Santa Ana, Cal. R. H. Tracy, production manager, was appointed vice-president of production. E. J. Draper, who has been chief chemist for the firm, was made vice-president of research.

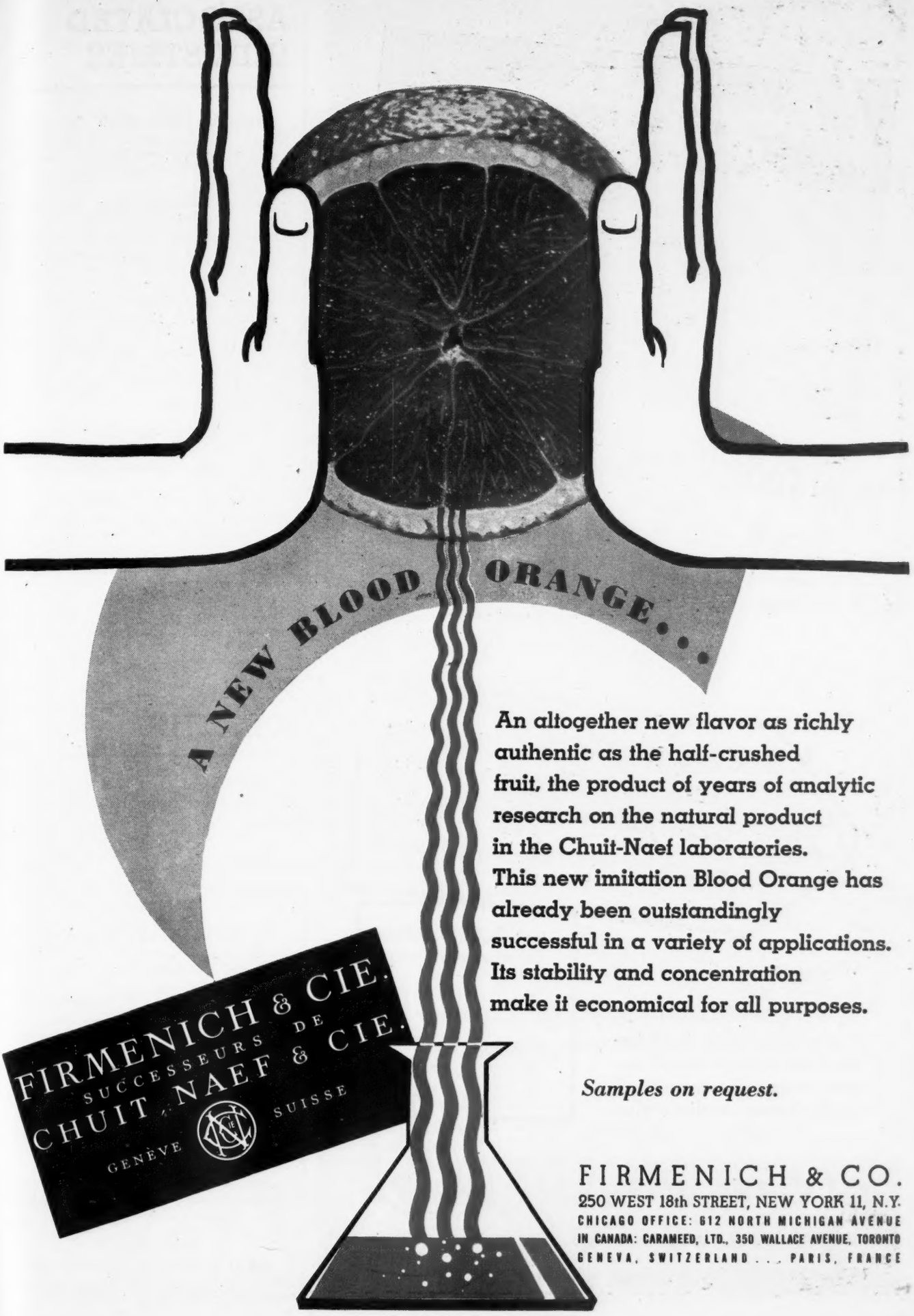
Reid T. Milner, a member of the staff of the Bureau of Agricultural & Industrial Chemistry for over 18 yr. has been appointed director of Northern Regional Laboratory of USDA. He succeeds G. E. Hilbert, who recently advanced to become Bureau chief.

Morris Morgan, formerly president of United Foods, Houma, La., is now associated with Armand Scully & Co. of New Orleans. He is in charge of dried shrimp, pecans, candies and general food specialties.

Dr. Morton M. Rayman has been appointed chief of the microbiological branch of the food research division of QF&CI for the Armed Forces, Chicago. He formerly was chief of the biochemical section, fermentation research department, of Publicker Industries, Inc., Philadelphia.

Dr. Wayne I. Tretsven, former private dairy consultant in Chicago, has been appointed head of the New Mexico A & M College dairy department. He succeeds Prof. O. C. Cunningham who recently retired after 30 yr. of service.

M. Martin Wahl, who in 1914 began work with J. Hungerford Smith Co., Rochester, N. Y., as an office boy, has been named president and general manager of the firm to succeed W. Frank Martin, who has been appointed chairman of the board.



An altogether new flavor as richly authentic as the half-crushed fruit, the product of years of analytic research on the natural product in the Chuit-Naef laboratories. This new imitation Blood Orange has already been outstandingly successful in a variety of applications. Its stability and concentration make it economical for all purposes.

Samples on request.

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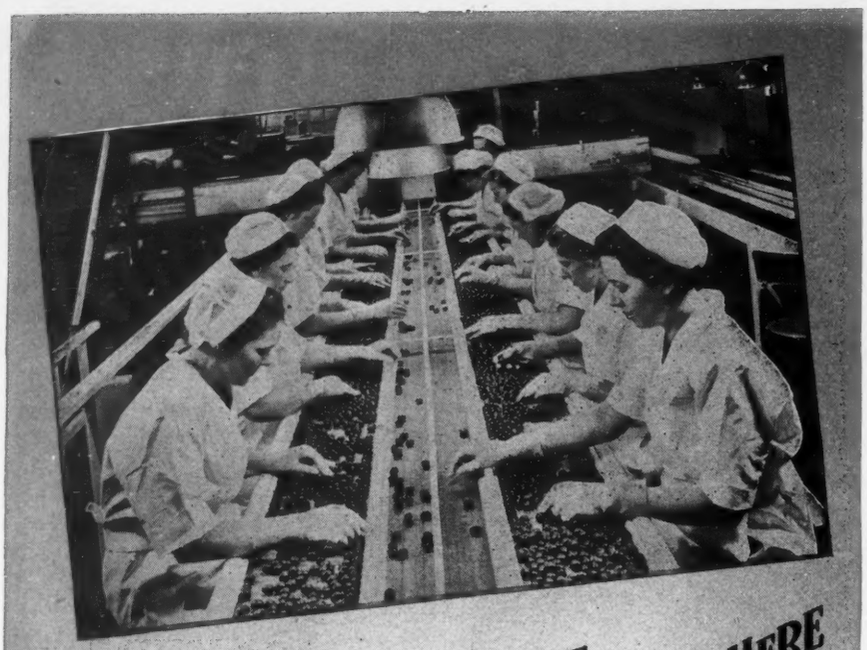
GENEVA, SWITZERLAND . . . PARIS, FRANCE



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Leading canners and food processors have for years learned to say: "O.K." (Order Kanry-Tex) for specific reasons:

O.K. ORDER KANRY-TEX for easy cleansing
O.K. ORDER KANRY-TEX for no odor or taste
O.K. ORDER KANRY-TEX for resistance to moisture, fats, oils
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We'd like to tell you more in detail about the advantages of GLOBE KANRY-TEX. We're sure you'll be interested for many practical reasons. Write today to your mill-supply house—or direct to us.

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GLOBE WOVEN BELTS

ASSOCIATED INDUSTRIES

Cambridge Wire Cloth Co., Cambridge, Md., has announced the opening of a sales office in Houston. Charles E. Shuman is in charge.

Hamilton-Thomas Corp. has been recently formed in Hamilton, Ohio, to operate Economy Pumps, Inc., Klipfel Manufacturing Co., and Liberty Planers, Inc.

Hagan Corp., Pittsburgh, announces election of D. J. Erikson to the presidency of the firm and its subsidiary companies—Calgon, Inc., Hall Laboratories, Inc., and Buromin Co. He succeeds J. M. Hopwood, who becomes chairman of board.

M. W. Kellogg Co., New York City, announces appointment of H. R. Austin to the firm's engineering staff.

Sylvania Electric Products, Inc., has named R. B. Fogarty as assistant division manager in the Atlanta office, and Judson Demarest as field representative in New Orleans.

Management Evaluation Services, Inc. has elected R. C. "Dick" Smyth as vice-president in charge of New England operations.

DEATHS

Alex Glantz, 62, founder of United Baking Co., Pittsburgh, at his home, Sept. 8.

Jerome I. Maier, secretary, treasurer and general manager of A. Goodman & Sons Macaroni Co., at his home in New York City, Aug. 9.

Dr. Edouard Muller, 63, president of Nestle-Unilac Corp., at St. Joseph's Hospital, Stamford, Conn., Sept. 28.

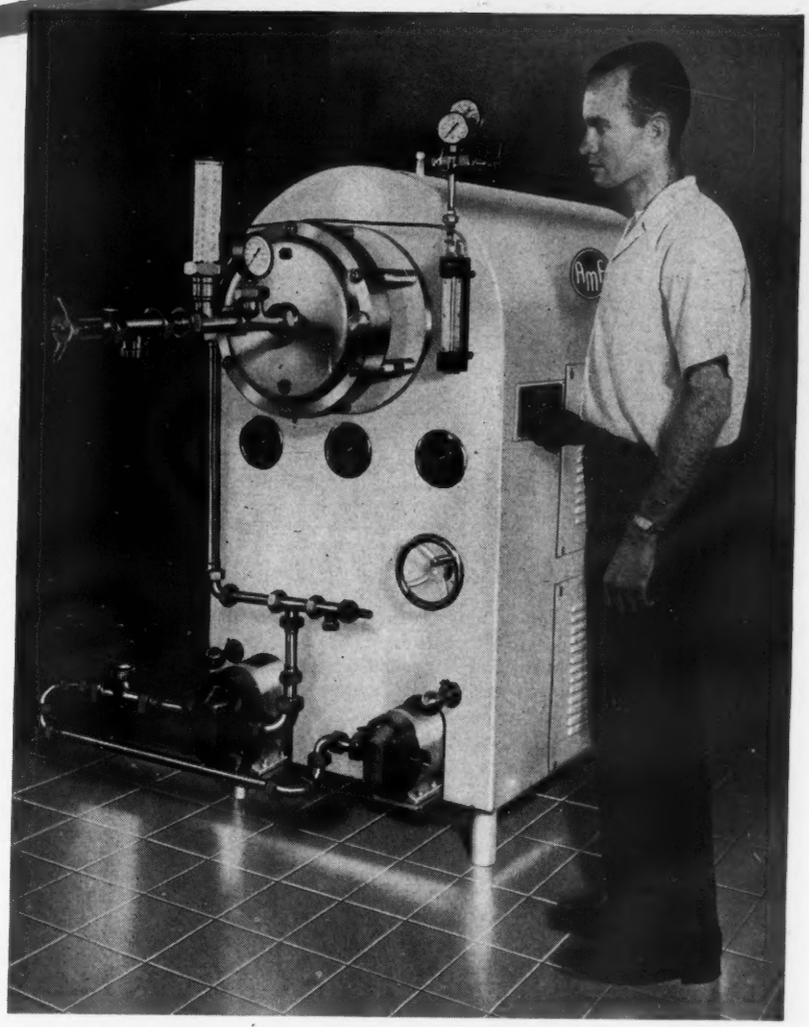
Paul L. Redel, 56, organizer of Redel Candy Co. in Milwaukee, and subsequently of Campfire Marshmallow Co. which he later sold to Cracker Jack Co., in New York City, Sept. 22.

Charles H. Swift, 75, chairman of board of Swift & Co., Chicago, in his home after a long illness, Sept. 30.

Prof. Robert Stotz, 58, head of dairy manufacturing department of Ohio State University, at Columbus, Ohio, Oct. 2.

Albert C. Beich, 52, vice-president of Paul F. Beich Candy Co., Bloomington, Ill., at his home, Sept. 29.

NEW REVOLUTIONARY CONTINUOUS, AUTOMATIC MIXING METHOD



The AMF OAKES Continuous, Automatic Mixer is successfully operating on regular production of icings, fillings, sponge cake, pound cake, batters and marshmallow.

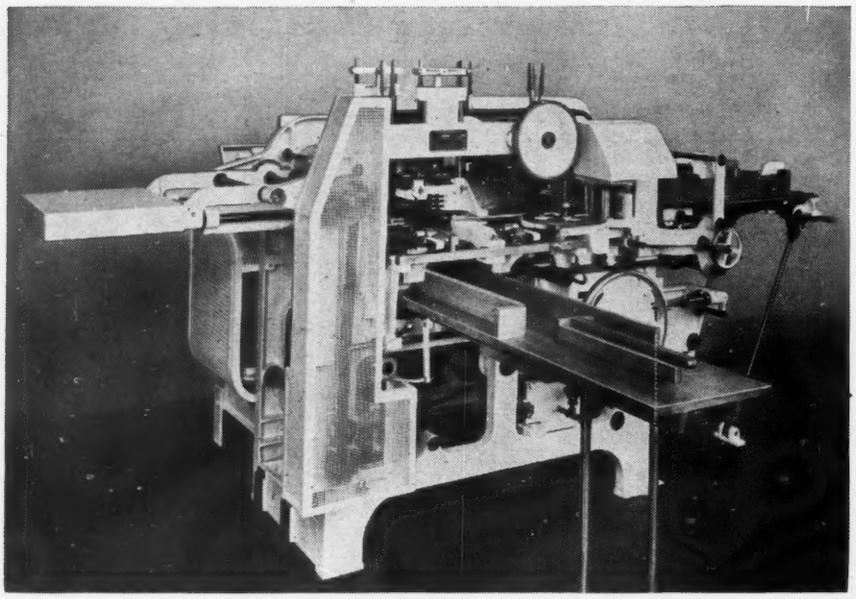
Laboratory and actual production tests have conclusively proved this new process gives: *more stable mix — greater moisture retention — uniformity* — and *longer shelf life to the product,* under *more sanitary conditions* with *reduced operating costs.* Finer cell structure gives velvet-smooth, tender texture for better eating.

PRODUCTION CAPACITY: UP TO 6,000 POUNDS PER HOUR

For complete details on this new, revolutionary method of continuous, automatic mixing, write for Descriptive-Data Booklet DM-499C. AMERICAN MACHINE & FOUNDRY COMPANY, 485 Fifth Ave., New York 17, N. Y.

AMF OAKES CONTINUOUS AUTOMATIC MIXER

FOOD EQUIPMENT NEWS



Package Bundler for Small Size Products 1

FOR PRODUCERS whose products are packaged in comparatively small sizes, a new bundling machine, approximately two-thirds the size of their standard F-10 bundler, is announced by The Package Machinery Co., Dept. I, Springfield, Mass. Machine, Model F-10-J, bundles goods in dozen or half-dozen lots in Kraft paper fed from a roll applying gummed end-seals also fed from a roll. End-seals may be from 2 15/16 in. to 5 15/16 in. wide and from 1½ in. to 3 in. high. Unit is adjustable for bundles within the following size range: 5 in. to 12 in. long, 3½ in. to 7¼ in. wide, and 2 in. to 4¼ in. high. Speed is adjustable from 8 to 24 bundles per min. Wrapping material can be over-all printed or plain. Bundle produced is stated to be strong and to stand up well in shipping and handling.

Flow Chart 2

TO PROVIDE convenient, direct-flow readings needing no separate calibrations, Strip-O-Chart attachment for SK rotameters, with rigid, cast iron tube frames, is announced by The Schutte & Koerting Co., Dept. I, Philadelphia, Pa. Retaining strip for chart is made of stainless steel, with removable scale reproduced on chart film. Chart will be made to customer's specifications and will contain P.O., calibration units and other information.

Velocity Indicator 3

UTILIZING a radically new approach to problem of measuring flow rates of liquids or gases, Stroboflow, manufactured by Flowmeter Corp. of America, Dept. I, High Falls, N. Y., incorporates a turbine-type velocity indicator with an electronic variable frequency generator, whose scale is calibrated directly in standard flowrate units.

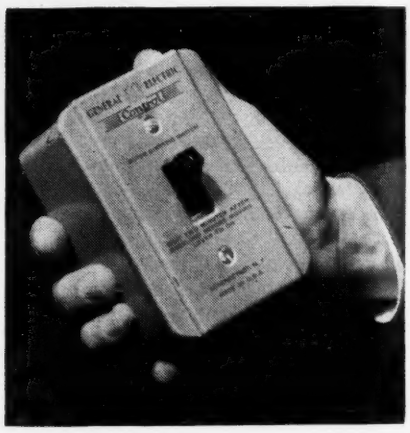
It is a compact portable unit, weighing less than 2 lb., connected in series with the piping. A molded impeller on a stainless steel shaft is mounted in Graphitar bearings between two transparent windows. Fluid passes through a carefully calibrated nozzle to play upon blades of impeller. A stroboscopic light is mounted behind sight glass in such a way that light may be observed through an aperture in impeller disk. Frequency of this flashing light is varied by moving pointer of variable frequency generator.

Generator is completely contained in a standard metal meter box with a sloping front panel on which is mounted knob and pointer assembly over a calibrated dial. A two pole switch is provided to allow a rapid change from output of generator to the frequency of a.c. supply. This whole unit measures only 4¼ in. x 4¼ in. x 5 in. Meter can be supplied in different materials to meet specific conditions.

Starting Switches 4

FOR USE with fractional hp. motors, a new line of manual starting switches has been announced by General Electric's Control Division Dept. I, Schenectady, N. Y. New switches are furnished in five different types: With general-purpose enclosure; without enclosure; a combination unit and a selector switch; with cast iron enclosure for wet locations, and a similar type for dusty or hazardous locations. Switches are desirable for use with fractional hp. motors driving blowers, pumps ventilating systems, small machine tools, and a wide variety of similar applications.

An important feature of all five types is a molded base of moisture-resistant



insulating material which mounts and encloses the mechanism and contacts. This particular construction serves not only to protect operating parts from dust and physical contact but also to direct heat concentration to the sturdy bimetallic tripping device, thus assuring that action of overload is quick and positive. Another feature is action of switch handle, which moves to "Off" position on overload, giving positive indication that power is shut off. Wheel-type movable contact cleans as it rolls against the stationary contacts, and, in addition, recedes into a recess in base, effectively snuffing arc.

All parts of these switches are rust-resisting, and readily accessible wiring terminals on tops of units facilitate easy wiring.

WRITE FOR MORE INFORMATION

Food Industries Reader Service now makes it easy for you to follow up the news on new equipment and new materials. Tear-out coupon cards are supplied for your convenience on the special colored page which follows the equipment news section in this month's issue. Enter your requests, fill out and mail cards, and let Reader Service do the rest.

Black-Light Egg Inspection 5

A METHOD of inspecting eggs for freshness by use of black light has been disclosed by Westinghouse Electric Corp., Dept. I, Pittsburgh, Pa. Held under invisible ultraviolet rays of black light, with wavelength of 3,650 Angstrom units, an old egg appears purple, while a fresh one glows scarlet.

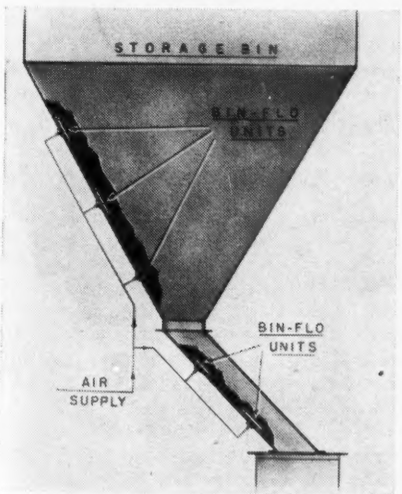
Composition of a hen's egg is such that outer shell and protein covering are fluorescent. This means that an egg glows brightly when held under ultraviolet light. Unrefrigerated eggs turn from scarlet to purple fluorescence in 8 to 10 days, while properly refrigerated eggs keep their original scarlet fluorescence longer. This change in color occurs when oxidation causes a chemical change in the shell.

It was further discovered that neither actual color of the egg nor washing with warm water affects these fluorescent qualities.

Black light offers many promotional advantages to both the retailer and wholesaler in the egg industry through the rapid detection of old eggs, which occasionally slip into deliveries of fresh ones. W. R. Wilson, Westinghouse lamp engineer, is credited with the development.

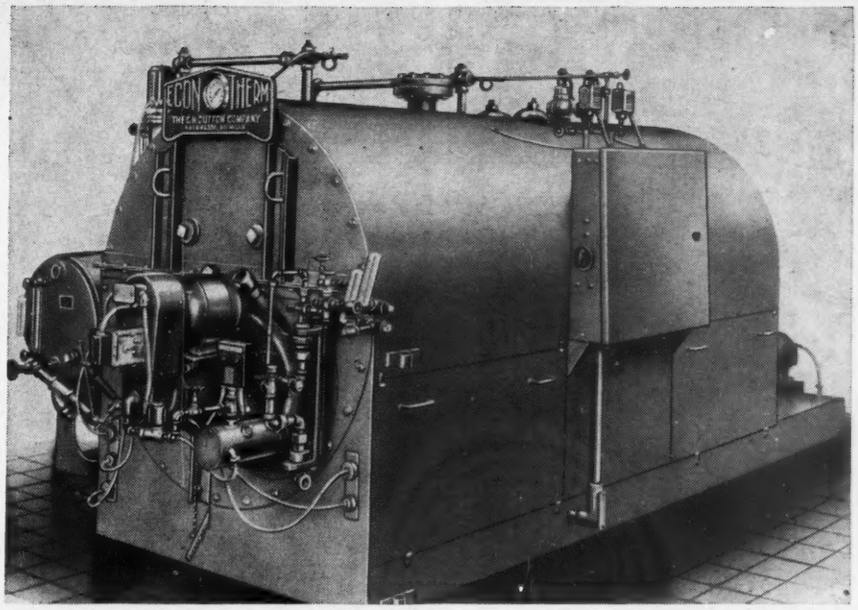
Bulk Flow Aerator 6

TO PROVIDE uniform and steady flow of bulk materials in bins and chutes, a new aerating device, Bin-Flow, is announced by Bin-Dicator Co., Dept. I, Detroit, Mich. It provides a solution to restriction and stoppage of bulk materials in bins and chutes. Unit is a small plate, 3¾ in. x 7½ in. x ½ in. thick, which is readily installed at points where flow is restricted. Low-



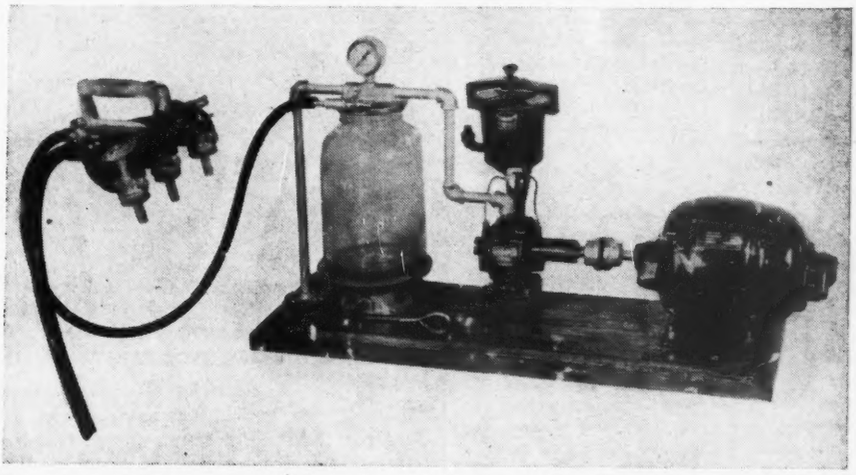
pressure air is injected into material through a special fabric diffuser, causing material to flow freely. Units will not plug-up even with most finely ground material, and they are applicable to most dry, finely-ground materials.

They can be used in conjunction with Bin-Dictators, or installed independently. Models are provided for thin-walled bins and chutes and for concrete and other thick-walled hoppers. Piping can be run either outside of thin-walled bin or inside of thick-walled container.



Improved, Compact Steam Generator 7

TO OVERCOME difficulties arising from lack of space as part of the installation problem, C. H. Dutton Co., Dept. I, Kalamazoo, Mich., announces development of new and improved Series 40 Econtherm steam generator. With removal of condensate return system and makeup water tank from casing, overall height has been reduced as much as 24 in., and overall length approximately 18 in. In tests made by manufacturer, removal of receiving tank from casing was found to permit introduction of preheated secondary air directly to combustion chamber, eliminating unnecessary resistance. Lowering of boiler shell in casing does away with draft resistance other than what is needed to overcome friction of the gases passing through boiler tubes. Cutting down draft loss also reduces fan speed, resulting in a quieter, smoother operation. Boiler feed pump and condensate return system is shipped as a separate unit and may be installed above or beside main unit, thereby permitting flexibility of boiler room arrangement.



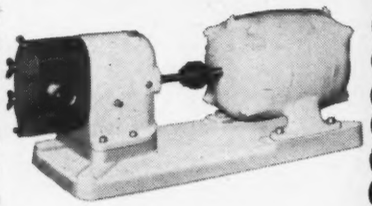
Portable Vacuum Glass-and-Can Filling Machine 8

SUITABLE for all shapes and sizes of glass and round cans, for rectangular cans up to 1 qt.; a bench type portable vacuum filler is announced by Scientific Filter Co., Dept. I, N. Y. C. It handles a large variety of liquids, light and heavy, and it fills all types of containers from vials to gallon jugs. Filling takes place directly from barrel, drum, carboy or other container placed underneath or beside bench. An adjustable, lightweight three-spout filling head takes care of several different container sizes. Solid block heads with multiple spouts can be furnished for small containers, such as sample bottles. Spouts are equipped with adjustable rubber washers which seal tops of bottles. Vacuum thus obtained causes liquid to flow into containers.

Excess liquid is withdrawn into an overflow jar mounted right on base with vacuum pump and motor. Fumes from corrosive liquids enter neutralizing trap, thus preventing contact with vacuum pump itself. Filling head is equipped with an air vent to prevent dripping. Level of liquid in containers being filled can be adjusted by rubber washers on each spout. Cleaning is quickly performed with aid of a few bottles and water or other solvent.

WATEROUS SANITARY PUMPS

STAINLESS STEEL 100% SANITARY



for PUMPING *Food Products of all Kinds*

POSITIVE ROTARY ACTION

ONE PIECE ROTOR AND SHAFT ASSEMBLY

SLOW SPEED ELIMINATES AGITATION

NO THREADS, SPLINES OR KEYWAYS IN PUMPING CHAMBERS

SANITARY MECHANICAL SEALS

NO BEARING SURFACES IN PUMPING CHAMBERS

REVERSIBLE INTAKE DISCHARGE PORTS

Ball bearing construction throughout, here is a modern advanced design in positive rotary pumps for handling food products of all kinds. A simple, efficient design and construction that assures long efficient service, the heavy duty precision ball bearings control both radial and end thrust loads on shafts and rotors. Bearings and timing gears operate in oil to assure long life and quiet operation . . . no internal metal friction in the pumping chamber.

There are no internal shaft or seal threads to contaminate your product. All liquid contact parts are removable for easy cleaning. Its slow pump speed eliminates agitation or aeration of product being pumped . . . capacity is in direct proportion to the pump speed . . . Waterous Sanitary Pumps can be operated at speeds ranging from 50 to 600 r.p.m.

Check the features emphasized and you'll see why food product plants prefer Waterous Sanitary Pumps for high quality, sanitary construction and efficient service backed by 62 years of continuous pump manufacturing.

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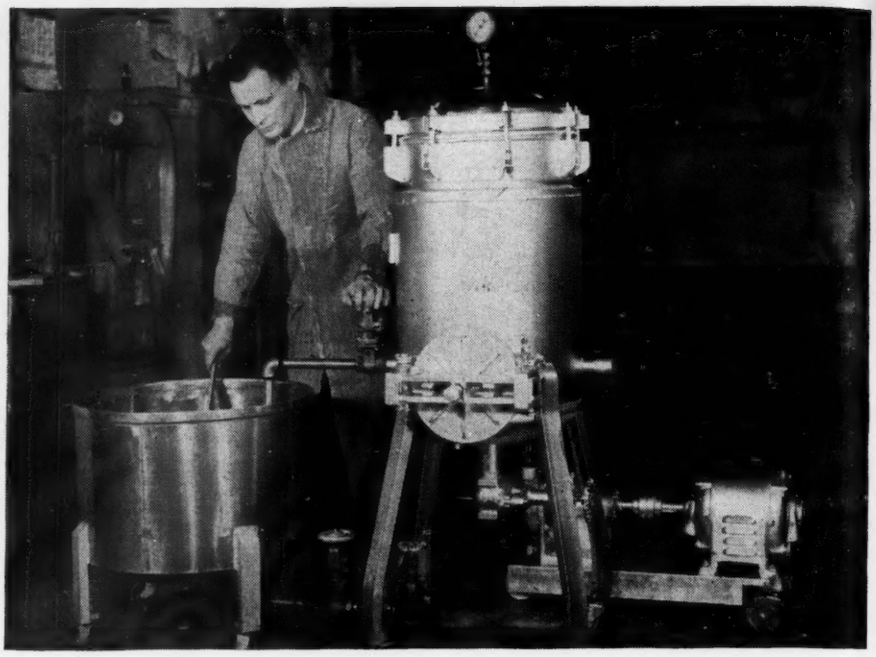
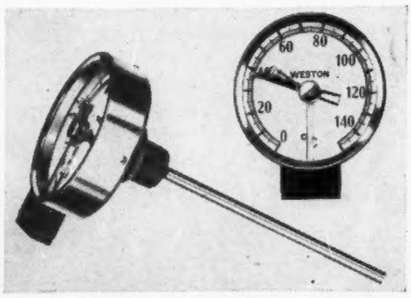


Pilot Filter Rental Service Available 9

IN LINE with trend toward pilot plant operations, a new pilot filter rental service has been announced by Niagara Filter Corp., Dept. I, Buffalo, N. Y. It is expected to fill the growing demand for running filtration tests on a pilot scale under plant conditions prior to plant-scale purchase.

Pilot filters are constructed as exact small-scale models of company's production size vertical pressure-leaf filters which have from 20 to 500 sq. ft. of filter area. The pilot filters themselves have up to 12 sq. ft. of area, 1 cu. ft. cake space. They are made entirely of Type 316 stainless steel. As optional accessories with this filter, a filter-aid mix tank, centrifugal pump and motor, and interconnecting piping, all in Type 316 stainless steel, can be supplied. Filters are available with or without steam jackets and cake removal door.



Contact Thermometer 10

COMBINING the features of an indicating thermometer in addition to an alarm or control device, a new contact-making thermometer has been announced by Weston Electrical Instrument Corp., Dept. I, Newark, N. J.

Instrument consists of an all metal thermometer with an adjustable contact arm mounted in glass and bezel, as illustrated. A screw-type terminal block mounted on periphery of case front provides for easy electrical connection. Contacts, of magnetic type, assure positive action during making and breaking of contacts. Arm is easily set to make contact at any temperature over entire scale. While it can be broken manually after an alarm has been sounded, the contacts "break" automatically on a temperature change of about 5 percent.

Thermometer can be supplied to make contact on either increasing or decreasing temperature. Accuracy as an indicating thermometer is 1 percent; and as a control device 1½ percent of the full scale range. Instrument is available in stem length from 2½ to 24 in., with longer stems available on special order.

Vacuum Cleaners 11

BUILT in four sizes, powered by 2-, 3-, 5- and 7½-hp. motors, and explosion-proof if desired, heavy duty vacuum cleaners are being manufactured by Breuer Electric Mfg. Co., Dept. I, Chicago. Machines have static water lifts ranging from 60 in. to 105 in. with air velocities from 315 m.p.h. to 480 m.p.h. moving from 200 to 360 cu. ft. of air per min.

Units are completely portable, having three smoothly rolling, 8-in. ball bearing casters. Low center of gravity reduces possibility of tipping and the compact design enables easy moving through aisle ways and congested areas.

A patented, self-cleaning air filter of approximately 1,000 sq. in. keeps the machine at a high level of efficiency at all times. This self-cleaning filter, located in the vacuum head, may be operated by the vacuum-blowing lever even while running, to save cleaning time and eliminate dust and health hazards. A lever instantly changes action from suction to blowing—possibly one of the most important features, since this quickly

affords a powerful blast of clean, dry, air for blowing out motors, gears, belts, fans and intricate machinery.

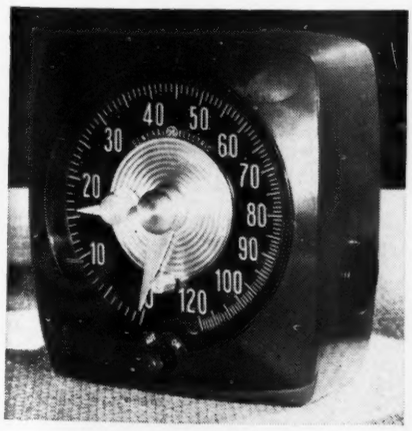
Unit is able to pick up wet or dry substances without harm to the filter or tank, needing no special attachments or equipment. After emptying, the cleaner may be used again for dry pick-up without any special cleaning or adjustment. Wet and dry materials may be picked up simultaneously. All cleaners are equipped with two intakes, and one or both can be used with either 1½ in. or 2 in. hose and attachments operating simultaneously.

Interval Timer 12

To FIT a wide variety of applications, a new automatic interval timer, Type T-48, in four models, has been announced by General Electric's Meter and Instrument Division, Dept. 1, Schenectady, N. Y.

Powered by a synchronous, self-starting permanently lubricated Telechron motor, timer operates on a 120v., 60-cycle, a.c. circuit, with a maximum load of 1,200 w. Inclosed in an acid-resistant, gray plastic case, it weighs just 2 lb.

A triple action control knob permits manual or automatic operation. A con-



trol pointer for setting desired time period and a timing pointer which measures cycle are made of anodized aluminum for durability. Dial is protected by a shatterproof plastic window.

At end of any cycle, timer resets automatically. Equipment to be controlled can easily be plugged into inlet receptacle on side of case.

National's "Successful Bottle Labeling" handbook — *which gives full details of modern labeling practices* — has been approved by leading manufacturers of labeling machines, labels and containers.

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FREE!

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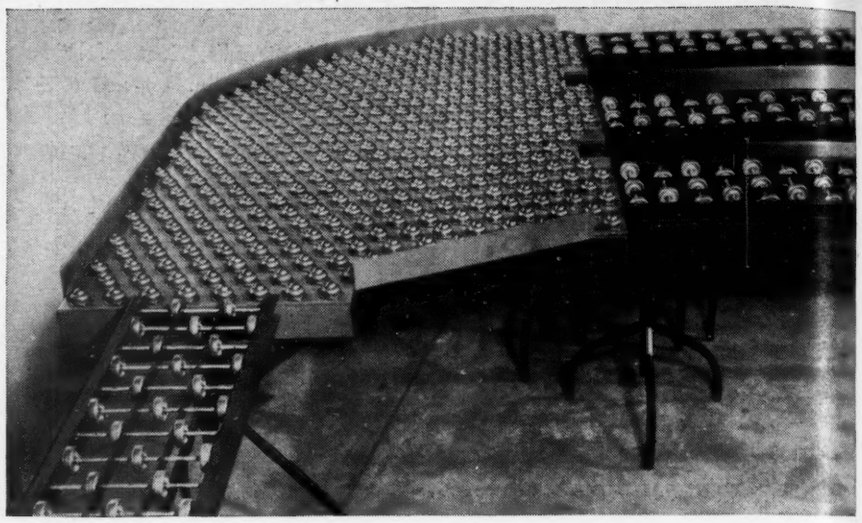


Ball-Transfer Carton Conveyor Table 13

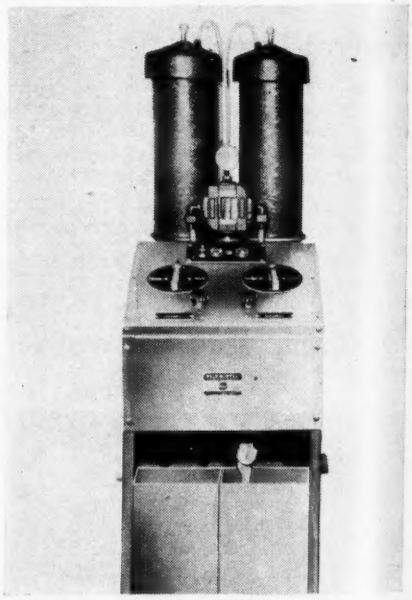
To FACILITATE handling all types of packages and cartons with flat bottoms, a ball transfer table is announced by Sage Equipment Co., Dept. I., Buffalo, N. Y. Its design and sturdy construction make possible the handling of loads as great as 10,000 lb.

With installation of this unit in all types of conveyors, articles may be removed from the line for inspection or other purposes without interrupting continuous flow. Design factors make it useful where several conveyors or lines are to converge into one.

Tables are built to individual requirements and specifications.

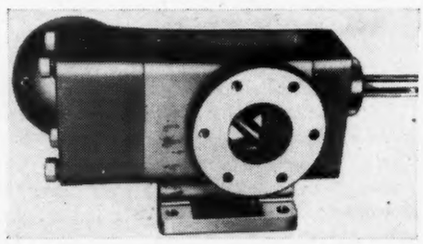
Bench Grinder 14

DESIGNED for grinding, buffing, tool sharpening and light production and tool room work, a new bench type grinder, called Grindmaster, is announced by Torq Electric Corp., Dept. I, Bedford, Ohio. The ¼ hp. grinder is furnished with two 6 x ¾ in. wheels, one coarse, one fine. Adjustable tool rests permit contact with wheel at any desired angle. Wheel guards and transparent eye shields provide ample protection for operator. Toggle type switch and 6 ft. cord with plug are supplied with each unit. Motor is single phase, 110v., 60 cycle and is available at present in ¼ and ⅓ and available shortly in ½ hp. Operating speed is 3,450 rpm.



Helical Rotor Pumps 15

A LINE of positive displacement, helical rotor pumps has been announced by The Syntron Co., Dept. I, Homer City, Pa. Two helical rotors—one a driving rotor, the other an idler rotor—force the liquid ahead in an axial flow, in volume and at



pressure. The shaft of the driving rotor is mechanically sealed by an anti-friction shaft seal against leakage. Built in two sizes, pumps are primarily designed for handling various grades of oils at either 50 or 75 gpm., at pressures up to 125 psi. in a smooth, pulseless flow.

Demineralizer 16

ADDED to the list of standard, pre-assembled demineralizers, a new model, U-60-2B, is disclosed by American Cyanamid Co., Dept. I, N. Y. C. It is designed to deliver low-cost chemical equivalent of distilled water by means of ion exchange and without heat. This new two-bed model is designed for users requiring approximately 60 gph. of water containing 5 to 20 ppm. (as $CaCO_3$) of dissolved ionized solids. Where water of higher quality is required, or where the raw water available is relatively high in total solids, standard, four-bed Model U-60 is recommended.

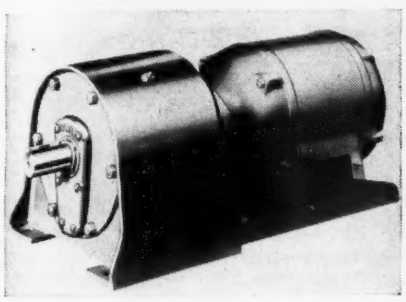
Model U-60-2B consists essentially of two columns, one containing company's

cation exchange resin C-200 and other anion exchange resin A-300, plus the valves, piping, and tanks required for regenerating resins when they are exhausted. Since unit requires no attention between regenerations, only the occasional service of one unskilled laborer is required to operate it.

Regenerants required per cycle are 3 lb. of acid and 1.5 lb. of caustic. Number of gallons of demineralized water delivered per cycle, and the cost per 1,000 gal., depend on quality of raw water available.

Speed Reducer 17

A NEW line of all-steel Motoreducers is announced by Falk Corp., Dept. I, Milwaukee, Wis. Housing is designed with smooth contours and generous sections which practically eliminate accidental damage. In addition it is equipped with a newly developed dirt-proof and moisture-proof seal which protects gears and bearings against contamination of lubri-



cant by moisture and dirt. The conservative horsepower rating assures long trouble-free operation of all properly selected units. Shaft diameters have been increased to provide greater torsional strength and considerable increase in overhung load capacity. Complete line includes horizontal and vertical units in both integral and all-motor types, for floor, wall or ceiling mount. Basic unit can be converted to right angle, V-belt, multi-speed, low ratio, ceiling mount and other adaptations.

Temperature Tester 18

FOR CHECKING performance and efficiency of heating appliances, a new portable oven-temperature tester has been announced by General Electric's Meter & Instrument Divisions, Dept. I, Schenectady, N. Y.

Instrument, designated as Type DO-50, is a sensitive d.c. millivoltmeter calibrated for use with iron copnic (constantan) thermocouples having a resistance of 2.0 ohms. It was developed to aid plant maintenance engineers, laboratory technicians, appliance servicemen, and factory maintenance engineers obtain quick, accurate readings when checking new installation performance or efficiency of ovens, control processing or heating equipment. New tester consists of a 3½-in. panel instrument mounted in a small leatherette-covered case with a compartment for storing the thermocouple assembly and leads. With a scale range of 0-650 deg. F, instrument has an accuracy of plus or minus 5 percent of full-scale value.

RIETZ MAGNA LIFT

From warehouse storage on pallets . . . to RIETZ Magnalift . . . to labeler and caser — an efficient mechanized operation using **one** operator. Magnalift reduces handling costs and minimizes dents by transfering cans from pallet to receiving belt layer by layer, at **two** to **three** times the rate for manual unloading with **four** men. Savings made with equipment illustrated can pay for this installation in one year.

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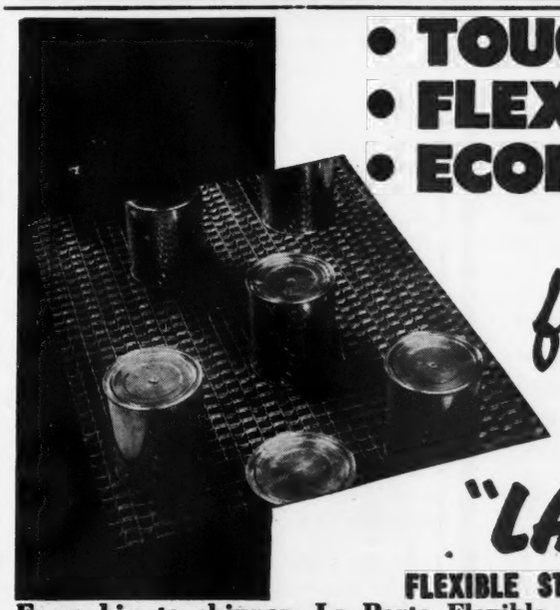

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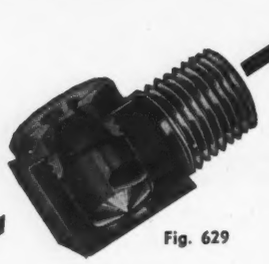

Fig. 629

Here is a nozzle with a single round tangential inlet (instead of several small slots) which permits relatively large solid particles to pass right through and out the orifice. Produces fine breakup, even distribution, and hollow cone spray suitable for numerous applications.

Available in Brass, Stainless Steel and Hard Rubber or made to order in any machinable material. ¼" to 1" I.P.S.

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- COOLING
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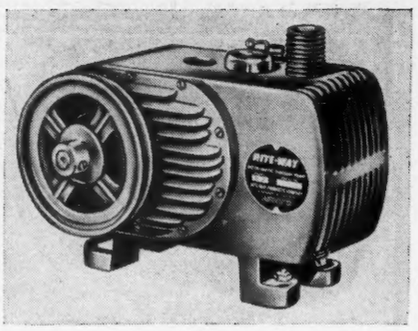


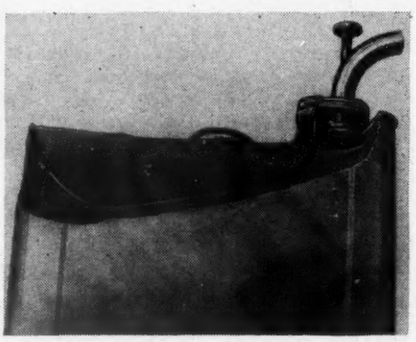
Vacuum Pump 19

AN improved rotating plunger type vacuum pump for general industrial use is announced by Rite-Way Products Co., Dept. I, Chicago. This compact, streamlined unit develops 28½ in. of vacuum on a blank test. With 15 in. of vacuum and speed of 1,700 rpm., the pump capacity is rated at 4½ cu. ft. of free air per min. Unit features a built-in muffler and a new, sealed-in lubricating system. Construction, states the maker, is extremely simple. A rotor is eccentrically mounted on a shaft rotating counter clockwise within the cylinder bore. There is no lost stroke; intake air mixes with oil which flows through the pump, lubricating all parts and sealing clearances. Oil vapor is condensed in muffler chamber and returns to exhaust chamber to be sucked up by oil line and recirculated.

Can Spigot 20

SIMPLE DEVICE for dispensing liquids from standard 5-gal. cans, Klix Speedy Spigot, has been announced by Klix Co., Dept. I, East Orange, N. J. Spigot provides a one-way passage for air into can, allowing a steady full flow of liquids through outlet. Gurgling and splashing in an uneven flow, with accompanying waste and hazard, are completely eliminated.

To operate spigot, pressure is applied to thumb button, opening positive-seating

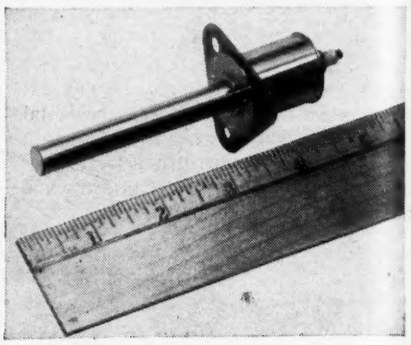


lapped plunger. Air enters inlet tube to open an automatic ball valve at its upper end. When desired amount of liquid has been drawn, pressure is released and a strong spring seats plunger, immediately halting all flow. Simultaneously, ball valve drops into place, closing air inlet and preventing escape of liquid or vapors.

Unit is made of copper, plated with cadmium for corrosion resistance. It is regularly furnished with two adapters to fit either of two popular thread variations on cans with 1¾-in. openings.

Thermal Switch 21

LIGHT WEIGHT, wide range of temperature adjustment, fast, positive action and long service life are features of a new thermal switch announced by Airite Products Co., Dept. I, Los Angeles 23, Cal. Heart of switch is a "Flexure" pivot which is frictionless and non-wearing, for accuracy and dependability. A high-temperature magnet is used both to quench any arcing and to compound its force with that of pivot, providing fast, positive action. Switch has hermetically-sealed, stainless steel housing. Change from

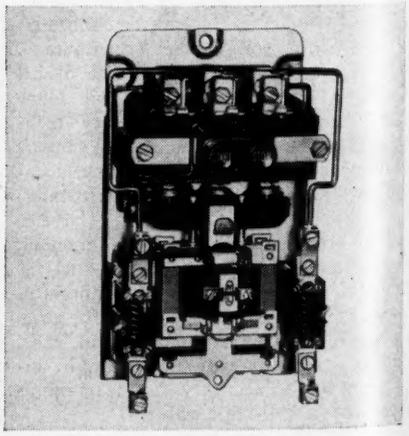


"normally-open" to "normally-closed" can be made by quick replacement of electrical terminal only. It contains no mica, insulated wire or plastic parts and meets new code AS-401, Type III. Although designed primarily for fire detection, new switch can be used for cycling control of heating and refrigeration systems, handling of oils, or chemicals.

Magnetic Starters 22

INTENDED for use in general and special purpose applications where across-the-line, non-reversing starting of polyphase squirrel cage induction motors and single-phase motors is permissible, a new solenoid-operated starter has been announced by Ward-Leonard Electric Co., Dept. I, Mount Vernon, N. Y. Starters are available with open type construction (as illustrated) for built-in or specialized controls, or with NEMA Type I general purpose inclosures. They can be controlled by separate pilot devices or can be supplied with local control pushbuttons or selector switches.

Features: High arc interruption capacity, compact unit construction, reli-



CATALOGS, BULLETINS

This digest of manufacturer's new publications is offered by FOOD INDUSTRIES Reader Service as a convenience for executives. The editors feature catalogs, data sheets and technical pamphlets likely to interest purchasing agents, superintendents, packaging men and food technologists.

Food Plant Equipment

Attrition Mills 51

Construction features and installation pictures of double runner attrition mills are given in 4-page Bulletin DR-448, while Data Bulletins DRC-1 and DRF-1 present typical installations, diagrams and specification tables of motor-driven and belt-driven mills.—Sprout-Waldron & Co.

Various Valves 52

In 80-page catalog, bronze and iron-body valves are described with pictures, schematic drawings, and specification tables giving size, weight and dimensions. Gate, angle and swing-check valves are reported available in weights for 125 to 300 psi. Alphabetical index simplifies finding of any desired valve.—Stockham Pipe Fittings Co.

Flexible Conveyor Belt 53

Scientifically designed conveyor for continuous processing of items such as baked goods and confections is the Cyclone Flex-Grid belt, described with specifications and diagrams in 4-page Bulletin HP-6. Photos of an installation in a doughnut baking plant are included.—Island Equipment Corp.

Corrosion-Resistant Parts 54

Compilation of products made from nickel, Monel and Inconel, available from stock or in standard designs, is offered in 24-page indexed bulletin "Standard Specialties." Described and illustrated under 47 classifications are such parts as balls, floats, nails, pickling slings and hooks, vibration isolators, wire rope, thermocouple protection tubes and tags. Items are checked according to availability.—International Nickel Co., Inc.

Air Blowers 55

Pneumatic conveyors for bulk handling, positive-displacement rotary blowers, and gas pumps are described in single-page data sheet. Blowers are available in capacities up to 10,000 cfm. with pressure of 10 psi. Gas pump features forced feed lubrication.—Sutorbilt Corp.

Feeders and Valves 56

Handling of pulverized and granular materials with vane-type and roll feeders is described in 8-page Bulletin F-3, which also pictures and gives information on rotary valves. Feeders are also available in totally enclosed models for vacuum service.—The Fuller Co.

Oil Standby Equipment 57

Operation of furnaces, ovens and heaters with fuel oil as well as gas is permitted by use of equipment described in 8-page Bulletin SC-139. Two installations are pictured, fuel oil specifications are given, and controls and equipment required are described.—Surface Combustion Corp.

Sanitary Ladder 58

Completely welded aluminum ladder, 25 in. high, is offered for use in dairy, ice cream and other food plants. Ladder is described in leaflet.—Paulsen Engineering Co.

Rubber Impeller Pump 59

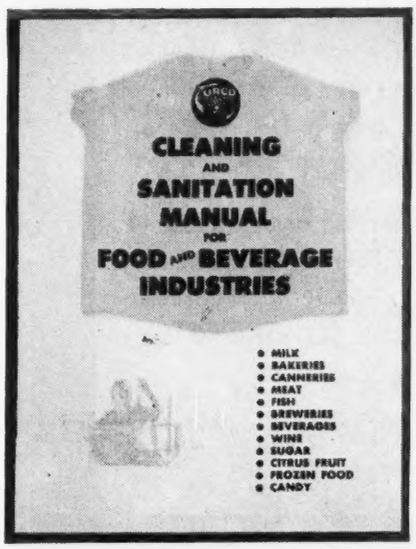
Present standard line of pumps is described in loose-leaf type catalog, containing specifications, prices, schematic diagrams of rubber impeller pumps for use in canneries, bottling plants and food processing plants. Data on resistance to corrosion of rubber and Neoprene impellers is tabulated.—Jabsco Pump Co.

Speed Reducers 60

New "Motoreducers", detailed in Bulletin 3101 are for use in driving mixers, agitators, conveyors, pumps, dust collectors, fans, washers, screens and various types of mills. Bulletin is punched for insertion in notebook.—The Falk Corp.

Sanitation Manual 61

Covering the field of cleaning and sanitation in food industries, this 59-page book gives specific recommendations for care of plant and equipment of various materials in eleven types of food plants. Included is a glossary of the



company's cleaning products, and procedures are considered for these industries: Dairy, baking, candy, canning and preserving, freezing, citrus, sugar, meat, fishing, brewing and beverage, and wine.—Turco Products Inc.

Wire Screens 62

Strainers and filter screens, custom built for the individual requirement, are pictured and described in 4-page Bulletin 7. Filters and strainers can be supplied in all commercial metals.—Cleveland Wire Cloth & Mfg. Co.

Storage Vat 63

All-welded construction and streamline design are features of CR storage vat with direct expansion cooling coil for products to be held at very low temperatures for lengthy periods. Available also with brine cooling coil, vat is described with illustrations and specifications in Bulletin G-438.—Cherry-Burrell Corp.

Pneumatic Conveyors 64

Air-activated conveyors for bulk-handling of any dry-pulverized or fine granular food products are covered in 4-page Bulletin 312. Special equipment is available for handling sugar and flour with clean moisture-free air.—Robinson Air-Activated Conveyor Systems, Div. of Morse Boulger Destructor Co.

Tilting Fork Trucks 65

Models 200, 300 and 400 in line of compact maneuverable electric fork trucks featuring center control are described in 10-page illustrated bulletin.—Wright Hibbard Industrial Electric Truck Co., Inc.

Synchronous Motors 66

Application advantages and installation pictures are presented for bracket- and pedestal-bearing types of synchronous motors. High speed motors, 500-1800 rpm., are described in 8-page Bulletin 1100-PRD-181; and low speed motors, below 500 rpm., in 4-page Bulletin 1200-PRD-175. Cutaway diagrams show operating details.—Electric Machinery Mfg. Co.

Pallet Loader 67

Service specifications, pictures, and operating details of an automatic pallet loader are given in 4-page bulletin. The loader, which palletizes 1200-1500 cartons per hour, can handle many sizes. It employs push button control.—Lamson Corp.

Stainless Stock Pot 68

San-I Tank stock pots, constructed entirely of 18-8 stainless steel and available in sizes from 5 to 50 gal., are described with specifications in Bulletin SP-48.—Metal Glass Products Co.

Conveyor Systems 69

"Modern Time and Cost Savers," 16-page Bulletin 62, describes and pictures gravity roller and wheel conveyors, portable piling machines, horizontal and inclined conveyors, and retractable horizontal loaders and unloaders. Units are especially designed for warehouses, bottlers, canners and packers.—Standard Conveyor Co.

Relief Valves 70

Type 316 S. S. safety and relief valves for liquid or vapor service are pictured and described in 4-page bulletin. Nine models are offered, and price lists are given.—Associated Valve & Engineering Co.

Mixing Machines 71

Specifications of standard sizes and capacities of dispersion, mixing and kneading machines for general use are given in 4-page bulletin.—Struthers Wells Corp.

Bag-Closing Equipment 72

Mechanized packaging unit with an automatic multi-station machine which weighs, fills, settles, sews and seals bags, is described in 8-page folder. Design is for free and semi-free flowing materials. "Bagpakers" which can close up to

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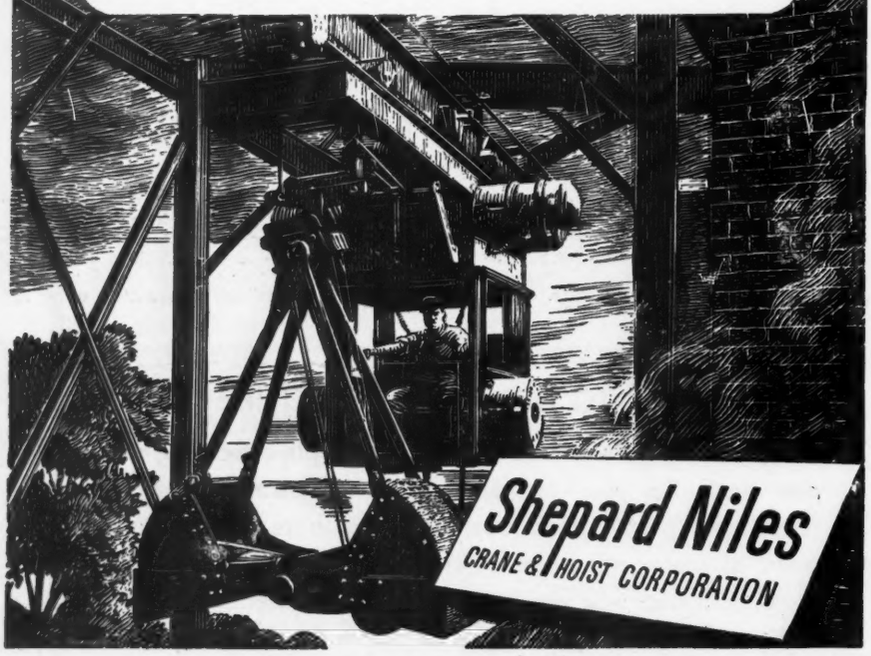

422 SCHUYLER AVENUE • MONTOUR FALLS, N. Y.

15 multiwalls per min., also units synchronized with conveyor, are pictured and described.—International Paper Co., Bagpak Div.

Power Belt Conveyor 73

Specifications for 15 sizes of "Stevedore, Jr.," a power belt conveyor for loading and unloading, are given in single-sheet Bulletin SJA N48.—Rapids-Standard Co., Inc.

Pressure Regulators 74

Set of capacity charts to obtain correct valve sizes on water, steam and air lines is one feature of 32-page Catalog D 14. Many photos and cutaway views are included, along with installation instructions. Prices are also given.—A. W. Cash Valve Mfg. Corp.

Frost-Free Refrigeration 75

Refrigerated air in motion for applications at sub-freezing dewpoint temeperatures is supplied by "No-Frost" method, described in 12-page Bulletin 105. Presented in four colors, flow diagrams show system of cooling and circulating air with fan spray cooler, condenser, and concentrator. No-Frost liquid is said to keep refrigerant coils clean of frost and to be tasteless, odorless and chemically inert. Economy is stated to be an outstanding feature of installation and operation.—Niagara Blower Co.

Plant Supplies

Water Demineralizers 76

"Filt-R-Stil Demineralizers Deliver Low-Cost Chemical Equivalent of Distilled Water," is 2-color, 26-page, revised edition giving chemical and mechanical principles of ion exchange, data on calculating costs, latest changes in specifications, and data on models and performance for two- and four-bed units.—American Cyanamid Co.

Insulation Data 77

"Insulation of Low Temperature Structures" is 32-page booklet discussing design for insulating food processing and food storage plants. Included are heat transmission rates, recommended practices for installing Fiberglas AE and PF board, cutaway views, photos, and a table giving ASRE recommendations for temperature and humidity in cold-storage plants.—Owens-Corning Fiberglas Corp.

Resistant Paint 78

Reported to be resistant to acid, alkali, alcohol, fats, oils and salts, at dry heat up to 300 deg. F., Prufcoat paint is offered for use in breweries, distilleries, bottling plants and dairies on floors, walls and all equipment. Application directions, are given in 4-page bulletin. Color chart is included, and prices are given.—Prufcoat Laboratories, Inc.

Ventilating Fans 79

Type "LL" limit-load conoidal fans for heating, ventilating and air conditioning are considered in 68-page Bulletin 3675. Fans are available in wheel diameter sizes ranging from 12 in. to 103 in. Performance curves, diagrams and pictures are presented, also 50 pages of dimension tables covering complete data for fans of Class I, II, III.—Buffalo Forge Co.

Flavoring Manual 80

True fruit extracts and concentrates, fruit base imitations, citrus flavors and vanillas, and specialties such as eggnog, butter pecan and black walnut, are considered in 16-page bulletin. Directions for use in ice cream, sherbet and water ices, also lists of flavors available, are given.—Fries & Fries.

Concrete Floor Hardener 81

How to curb accidents and production delays and reduce maintenance costs for rough concrete floors is related by 6-page folder describing Lapidolith, a liquid concrete hardener designed to dustproof floors and to protect against deterioration. Application data are given.—Building Products Div., L. Sonneborn Sons, Inc.

Paint Remover 82

Stripit, material for removing paint, lacquer, primer, synthetic enamel and varnish, is described with pictures and how-to-use data in

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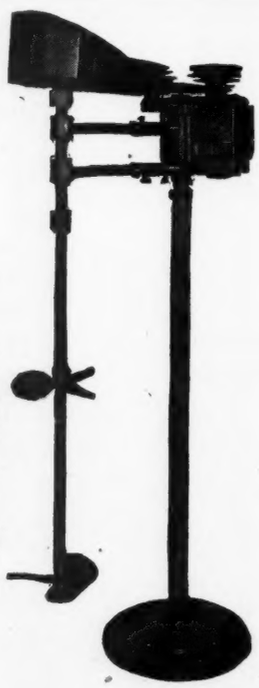

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4-page Bulletin 41. Maker states remover is nonflammable and needs no neutralizing agent. —Magnus Chemical Co.

Emulsifying Agent 83
Uses and qualities of lecithin, employed in the confectionery industry for chocoate, caramel, fudge, nougat, taffy, are discussed in 8-sheet technical bulletin. Structural formula of lecithin shows chemical and physical features of this emulsifying agent.—Products Div., Central Soya Co., Inc.

Floor Coating 84
For painting concrete floors which require frequent washing, Endur Carborundum floor paint is recommended in 8-page folder. Containing uniformly dispersed particles of carborundum, this paint is said to be long-wearing and easy to clean. Sample patches are included in bulletin showing six colors available.—Endur Paint Co.

Control Equipment

Combustion Control 85
Protection against flame failure in automatic and manually ignited gas or oil burners is described, along with installation and maintenance data, in Bulletin 604, CH4751-52 and CG-4752-52.—Combustion Control Corp.

Tin Content Indicator 86
Technical explanation of the method of determining the tin content of a solder batch is provided in 4-page Educational Bulletin 8. Specifications, operation and price information on the indicator are contained in 2-page Bulletin D-700-1.—Wheelco Instruments Co.

Electrical Controllers 87
Ways to improve operating efficiency are outlined in 40-page illustrated Catalog ND-4A(1) titled "L&N Electrical Control, Position-Adjusting Type." Full proportional control action with automatic droop-correction is reported for Micromax instruments. Speedomax line is recommended for extreme sensitivity and high speed of response.—Leeds & Northrup Co.

Orifice Metering 88
Proper sizing of flow nozzles and orifices by a new method of calculation is presented in 10-page Bulletin T-100-M, titled "Capacity Data for Concentric Orifices and Flow Nozzles." Included are diagrams for recommended pressure tap spacing and for permanent pressure losses. —Hagan Corp.

Pasteurization Control 89
For use with flash pasteurizers, the Electronik "Continuous Balance" potentiometer is offered in "Instrumentation Data No. 3.2-3," fifth in series on instrumentation in food processing industries. An installation in continuous juice processing using tubular heat exchangers is discussed in this data sheet.—Brown Instrument Co.

Temperature Regulator 90
For controlling temperatures in industrial furnaces and ovens, the free-vane electronic controller is offered in 6-page accordion Bulletin PB1237. Wiring diagram is presented, also photographs of the complete instrument and the control unit. Sample scales for the indicating controller are shown. Bulletin is punched for insertion in notebook.—The Bristol Co.

Miscellaneous

Brewers' Handbook 91
Values for apparent and real extract, degree of fermentation, and alcohol content by weight and by volume are given for wort extracts of gravities ranging from 7.0 to 16.1 percent in new 48-page edition of "Extract and Alcohol Tables."—Schwarz Laboratories.

Research Institutes 92
In pictures and text, 20-page bulletin describes the place of independent research institutes in industry, also lists facilities, projects and personnel.—Stanford Research Institute.

FOOD TECHNOLOGY

NEW DISCOVERIES AND INVENTIONS

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CONFECTIONERY

Tempering Chocolate

IRRESPECTIVE of fat content, any body of chocolate will respond to temper if the temperature is within the dipping range—88 to 92 deg. F. Nothing is gained by melting at a temperature above this range, however, as the higher melting fats in the cocoa butter will set up during tempering with the possible formation of large crystals.

A close study of temperature and its influence on the formation of crystals revealed that overheating is undesirable in the treatment of cocoa butter. Crystallization will require extreme care in the cooling in order to recover the proper conditions for crystal development and growth. If it is melted very carefully by bringing the cocoa butter up to 92 deg. from a solid, all the necessary characteristics can be retained and the tempering job is done. What is taking place here is the beginning of the melting of the higher melt fractions—the reverse of the crystallization that takes place during careful cooling from higher melt temperatures.

Probably the most difficult task is to retard crystal development beyond the optimum point in the holding tank and allow no further development until the merchandise has been coated and moving down the cooling conveyors. Unless the center heat is removed prior to packing, a premature fat bloom will develop. As a remedy for this, centers should be cooled to 60-70 deg. throughout, then to avoid freeze from within, they should be heated just before the centers reach the enrober wire.

Prompt and efficient cooling is a definite step in the control of fat bloom. In the whole cooling process, it is the first couple of minutes that really count. A cooling tunnel should be so constructed that it is really an air conditioner. It works best when production belts are crowded. By reducing the tunnel depth at the packing end, air velocity is greatly increased at this point and better cooling obtained.

The electronic melter is an instrument seemingly built to order for melting and tempering coatings. Crystals of great strength form on the exterior of the 10-lb. slabs. The interior crystals are weak due to delayed cooling. Should these center crystals be retained as a medium of temper they would dominate the whole system. With the electronic melter the center of the cake is liquefied, the exterior crystal patterns are retained and the entire body is kept within the temperature range. After slight agitation, it is possible to go directly into production, the tempering process is entirely eliminated.

Digest from "Chocnology", by Thomas Brown, presented at the 2nd Production Conference, Pennsylvania Manufacturing Confectioners' Assn., Bethlehem, Pa., May 21, 1948.

MEATS

Coated Meat Products

A CREAM type coating for meat loaf products, that adheres well, does not become brittle and is free from the tendency to mold or turn rancid upon standing for long periods of time, is the object of a recent invention. Basic constituents of the coating are 18–20 percent cream and gelatinized starch. Small quantities of vinegar, sodium citrate, alcohol and flavoring ingredients may also be added. The mixture is heated to 212 deg. F., then cooled to 95–105 deg. at which temperature the product is coated.

Digest from U. S. Patent 2,440,517, issued April 27, 1948, on an application dated June 7, 1943, to J. N. Lesparre, Chicago, and assigned to Armour & Co., Chicago.

FATS AND OILS

Confectioners Butter

PREPARATION of confectioners hard butter from vegetable oils by a process of low-temperature interesterification is the subject of a recent patent. The method reportedly improves upon the customary procedure of fractional crystallization of a vegetable oil and separation of the solid and liquid fractions by hydraulic pressing.

Essential to the new process is a catalyst that will promote interchange of fatty acid radicals at the low temperatures required for crystallization during interesterification. Effective catalysts include compounds of sodium or potassium with practically any material less acidic than phenol, such as methoxides, ethoxides, propoxides, butoxides, and alkoxides made from alcoholic compounds.

In a typical example, coconut oil was agitated for about ½ hr. in a closed container with 0.3 percent of its weight of sodium methoxide in the form of a 10 percent suspension in xylene. Temperature was gradually reduced to 70 deg. F. and held there for a day, then reduced to 60 deg. F. and held for 5 days, at which time the catalyst was inactivated by the addition of glacial acetic acid. The oil was then alkali-refined, bleached, and deodorized. Samples of the processed oil at about 120 deg. F. were poured into molds, stored at 50 deg. F. until solid, then kept at 70 deg. F. for at least 16 hr.

The final product was declared superior in "snap" and edible characteristics to the original oil and to a sample of confectioners hard butter made by the customary method of fractional crystallization.

Digest from U. S. Patent 2,442,536, issued June 1, 1948, on an application dated Nov. 23, 1946, to E. W. Eckey, Wyoming, Ohio, and assigned to The Procter & Gamble Co., Cincinnati.

Preserving Food Fats

FOOD FATS, used in emulsified form for the manufacture of margarine or butter, are preserved by the addition of combinations of small amounts of non-toxic antioxidants, according to claims of a recently patented invention. The antioxidant is to be an aqueous product containing substantially equal proportions of an aliphatic hydroxy polybasic acid, selected from the group consist-

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ing of tartaric, citric and malic acids, and an aromatic para hydroxy monobasic acid ester selected from the group consisting of propyl, butyl and benzyl hydroxy benzoate. When butter fat is used, an emulsifier such as water soluable vegetable gums, water soluble alginates, locust bean gum and karaya gum, is added to improve dispersion of salt water and the antioxidants in the butter fat. No claim is made for the use of vegetable gums in margarine.

Digest from U. S. Patent 2,444,307, issued June 29, 1948, on an application dated Apr. 27, 1945, to F. H. Penn, Dallas, Tex.

DAIRY

Ripening Blue Cheese

ADDITION of cell-free lipase obtained from *Mycotorula lipolytica,* to homogenized milk for use in the manufacture of blue cheese greatly improves the desirable characteristics of the ripened cheese.

Seven series of blue cheese made from pasteurized homogenized milk, with and without the addition of a cell-free lipase preparation obtained from *M. lipolytica,* were examined after a ripening period of 12 weeks. Tests for flavor and other desirable characteristics showed that cheese ripened with the aid of the cell-free lipase preparation were consistently more satisfactory than the corresponding controls. The cheese containing the added lipase had more organoleptically detectable free fatty acids, as well as ketone flavor, and a waxier body than the control cheese. Increases in the concentration of the lipase increased the total volatile acidity values of the cheese, also the intensity of the flavor typical of blue cheese. Total volatile acidity values of 30-50 gave the most satisfactory flavor. Above 50 the flavor was sharp and soapy.

Digest from "The Influence of *Mycotorula Lipolytica*" Lipase upon the Ripening of Blue Cheese Made from Pasteurized Homogenized Milk," by I. I. Peters and F. E. Nelson, *Journal of Dairy Science,* vol. 31, 611-18, July, 1948.

Whipped Powdered Cream

CREAM-MIX, made from a dried mixture, whips as well by aeration as an undried product. The cream mix was made from fresh sweet cream, condensed skim milk, skim milk, sugar, stabilizer and flavoring. It was pasteurized and spray-dried. The following factors were studied: Composition of the cream-mix, nozzle size, spray pressure, and relation of inert gas and antioxidants to keeping quality. For whipping purposes the mix was reconstituted with water and held for 24 hr.

(*Continued on page* 192)

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Crystalline form—easy handling, rapid dispersion in water, free from lumping.

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High temperature resistant—holds thickened state at elevated temperature.

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It's ready for you *now!* A starch especially processed to help give you an improved product with better consumer acceptance.

So far, General Mills Crystalline A-22 Wheat Starch has been used with excellent results in:

- Salad dressings
- Fruit pie fillings
- Ice cream cones
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at 40 deg. F., after which it was dispensed from Instant-whip containers charged with nitrous oxide gas.

Satisfactory results were obtained from a product containing the following percentages on a reconstituted basis: Butterfat 30, milk solids-not-fat 7-8, sugar 5, emulsifying agent 0.3 and vanilla concentrate 0.1. When whipped by aeration this cream-mix yielded results similar to those obtained with the undried product.

No marked differences were observed in whipping properties of reconstituted whipped cream-mix made from cream-mix sprayed with nozzles nos. 64, 72, and 79. High spray pressures were detrimental to whipping properties.

Keeping quality was improved by packing in inert gas and by adding antioxidants before drying. Most effective antioxidant was vanilla concentrate; others were NDGA, gallic acid and Viobin.

Digest from "Manufacture of Powdered Cream for Whipping by Aeration," by Harry Pyenson and P. H. Tracy, *Journal of Dairy Science*, vol. 31, 539-50, July, 1948.

CEREAL PRODUCTS

Flour-Enrichment Vehicle

A FREE-FLOWING stable composition through the medium of which flour can be enriched uniformly without adversely affecting its ash value is the object of a recently patented invention.

The base composition contains fat-free, low-moisture, ashless starch filler, talc, tricalcium and monocalcium phosphate in the form of a substantially anhydrous powder equal to at least 300 mesh or finer. To this vehicle can be added vitamins and assimilable minerals selected from the group, including Fe, Mn, Cu and I. An additional characteristic of the composition is its pH value, of less than 7, in aqueous solution or suspension.

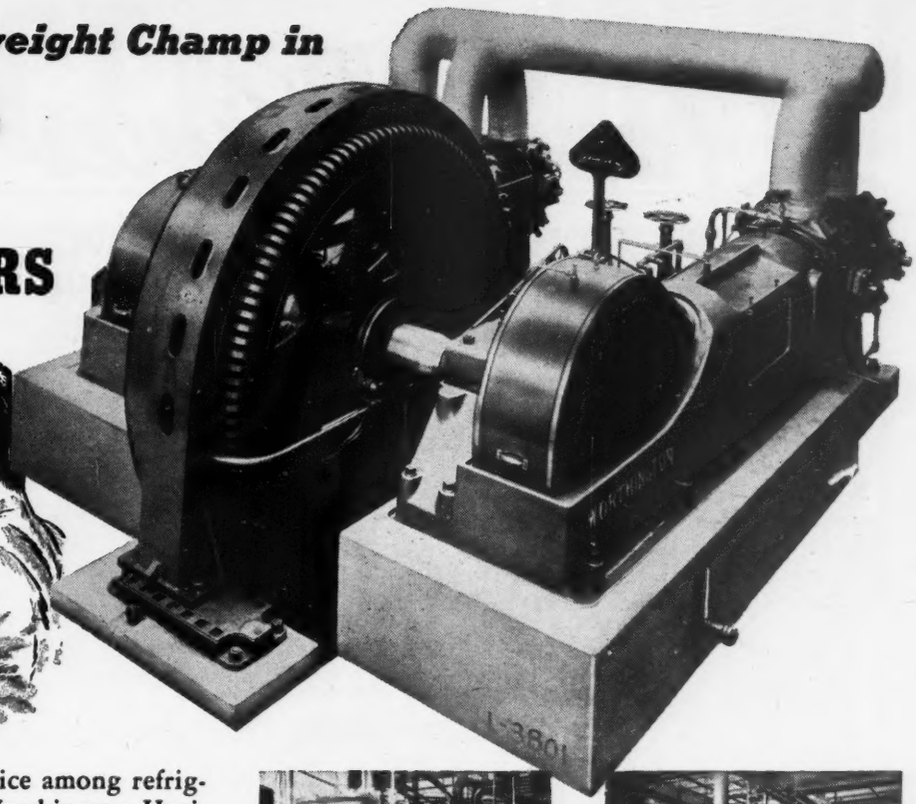
Digest from U. S. Patent 2,444,215, issued June 29, 1948, on an application dated Aug. 19, 1943, to R. S. Whiteside, Scarsdale, and P. V. Kolb, Rye, N. Y., and assigned (mesne assignment) to Winthrop-Stearns, Inc., N. Y. C.

Flour Product

A NEW flour product which will disperse in water to form a relatively thin slurry without lumping or forming a dough, and without foaming excessively when agitated, is the object of a recent patent. This is accomplished by treating cereal flour with a formaldehyde under substantially dry conditions. Paraformaldehyde in powder form is suitable for intimate dispersion throughout the flour, where it is allowed to react on the protein content for about 7 days. Quicker reaction

Here's the Heavyweight Champ in

HORIZONTAL DUPLEX COMPRESSORS



For heavy-duty work, first choice among refrigeration compressors is the Worthington Horizontal Double-Acting Compressor.

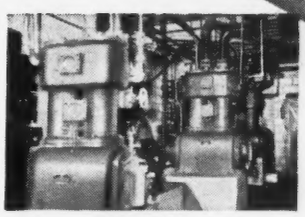
There's *solid punch* in the machinery-steel piston rods operating in special alloyed semi-steel cylinders with full-size suction and discharge openings, large refrigerant-gas passages and liberal valve area.

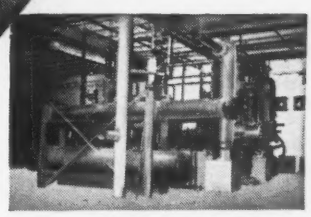
There's *sure-footedness* in the cast-iron frame, with base extending full length to minimize cylinder overhang and give maximum bearing on foundation.

There's *staying-power* in the open-hearth steel-forged crankshaft . . . counterbalanced crank pressed onto shaft and securely keyed . . . heat treated and hardened crank pins . . . marine-type connecting rods.

And there's *trouble-protection* in the exceptionally deep stuffing boxes with metallic full-floating packing . . . babbitt-lined steel bearings centrifugally cast in steel . . . full pressure-type lubrication on large sizes, flood type on smaller.

For further proof that *there's more worth in Worthington,* see your nearby Worthington distributor, or write for Bulletin C-1100-B20 to Worthington Pump and Machinery Corporation, Harrison, N. J. *Specialists in air conditioning and refrigeration machinery for more than 50 years.*





WORTHINGTON IN WORLD'S LARGEST ORANGE JUICE PROCESSING AND CONCENTRATING PLANT

At the Dunedin, Fla. plant of Juice Industries—reputedly the largest of its type in the world—Worthington has installed:

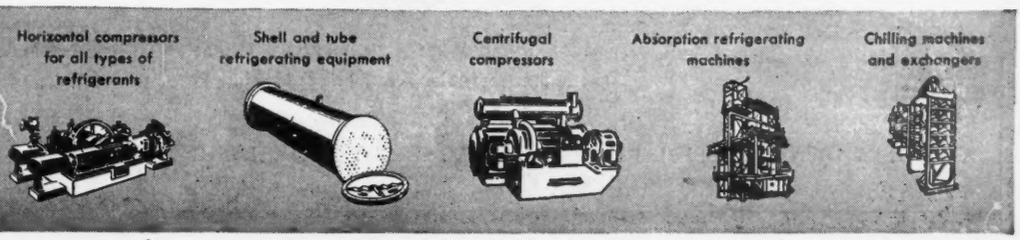
LEFT—Three vertical ammonia compressors to cool two large storage rooms—one where frozen concentrated orange juice is kept at zero degrees, the other for standard concentrated juice at 35F. Both rooms are 80 by 80 by 20 ft high; the former has 12 in. of insulation, the latter 6 in.

RIGHT—Horizontal ammonia compressor for quick-freezing the concentrated juice at minus 20F. Quick-freezing of the juice (while packed in cans) seals in the vitamin content which would dissipate if stored for long at moderate temperatures.

WORTHINGTON

A8-37

FIVE MORE REASONS WHY WORTHINGTON LEADS IN INDUSTRIAL REFRIGERATION


Horizontal compressors for all types of refrigerants
Shell and tube refrigerating equipment
Centrifugal compressors
Absorption refrigerating machines
Chilling machines and exchangers

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STOKES & SMITH Co

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The acquisition of Stokes & Smith Co. by Food Machinery and Chemical Corporation will combine S & S 48 years' experience in the Packaging of Dry Products with the greater facilities for creative research, skilled engineering, quality manufacturing and sustained service of FMC.

Stokes & Smith, as a division of FMC, will continue to operate the same plant, with the same personnel and management who have done so much to establish and hold their reputation in the Industry.

The Stokes & Smith Co., augmented by the added facilities and experience of FMC, will bring improved equipment and more complete service for the Packaging of Dry Products.

Filling Machines - Carton Filling & Sealing Machines
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OTHER S & S PRODUCTS . . .

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can be obtained at temperatures above the ordinary, but not so high as to degrade the starch to form dextrines or other modification products. Preferred pH of the mixture is 6-9. Thus treated the product is useful as a corrugating adhesive, a size in the manufacture of paper, textiles, rug anchor, and as a practical substitute for starch.

Digest from U. S. Patent 2,443,290, issued June 15, 1948, on an application dated April 30, 1943, to J. V. Bauer, Elmwood Park, Ill., and assigned by mesne assignments to Stein, Hall & Co.

STORAGE

Frozen Poultry Storage

OBJECTIVES of a recent study on the freezing preservation of poultry were to determine the influence of evisceration practice, packaging, and storage temperature. Birds were eviscerated while warm and after chilling (within one hr. vs. 24-40 hr.). They were packed in tins and in waxed paper, and were stored at 20, 10, zero, −10 and −35 deg. F. These birds were compared with fresh controls slaughtered and aged at 39 deg. F. for 24 hr.

Birds stored at 20 deg. F. suffered in appearance, showing microbiological changes, desiccation and "old" odors. At zero there was no evidence of microbiological growth, and desiccation was less serious; but birds wrapped in wax paper cartons showed desiccation after 6-9 months of storage.

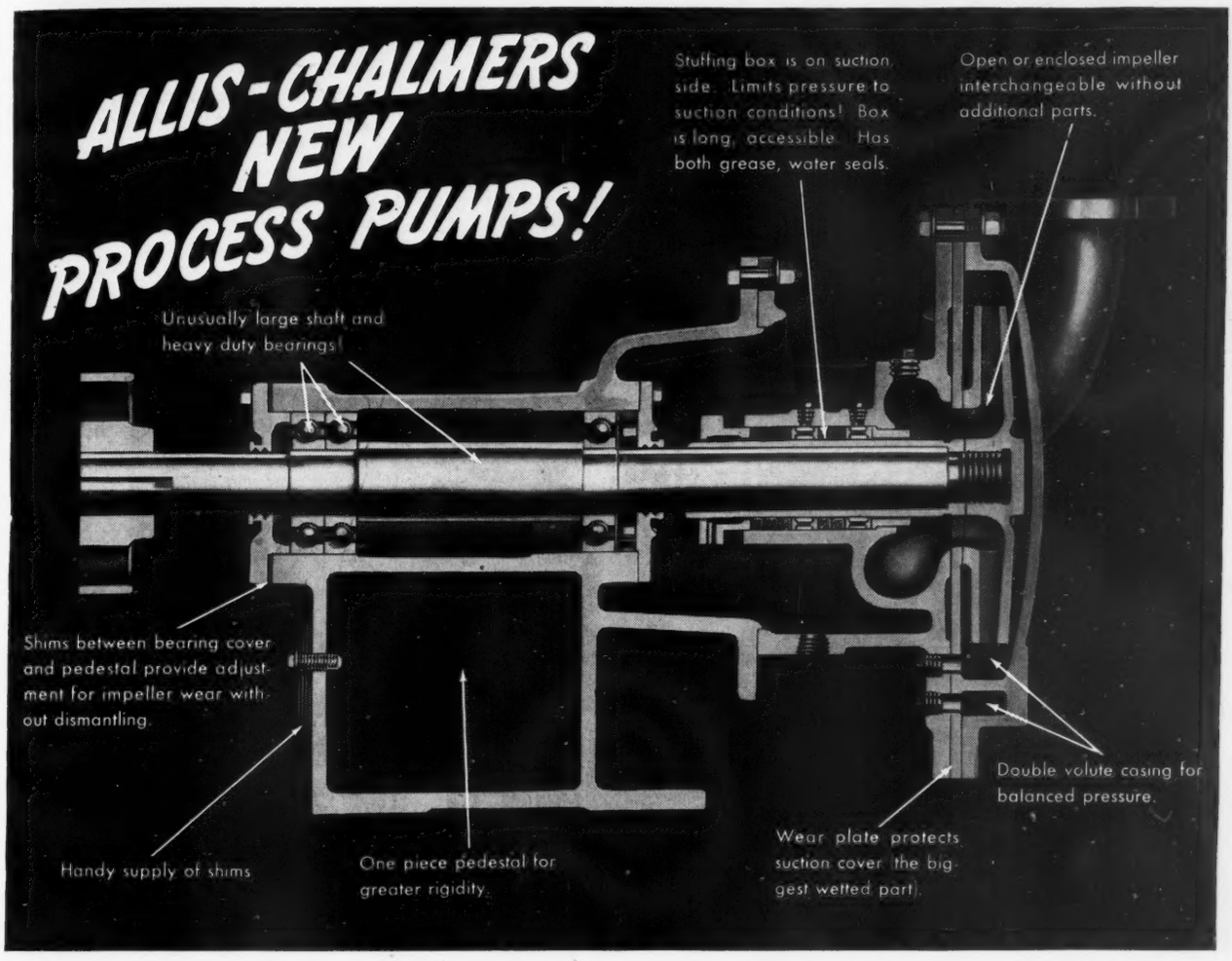
Serious changes in flavor and juiciness occurred in birds stored 3-9 months. Critical temperature seems to be 10 deg. F. This and higher temperatures were unsatisfactory. Those below were relatively satisfactory. Little or no difference in palatability was noted in birds eviscerated warm and cold. Tin containers were definitely superior to wax cartons in maintaining good appearance. Except at 20 deg. F. and aside from appearance, no marked differences in palatability could be attributed to packaging.

Digest from "Frozen Storage of Poultry," by R. Wills, B. Lowe, H. Slosberg, and Geo. F. Stewart, *Refrigeration Engineering*, vol. 56, 49-51, July, 1948.

Storage of Frozen Foods

QUALITY of frozen foods is affected more by insufficiently low storage temperatures than by fluctuations in temperature. In experiments with meat, fruits and vegetables, stored for one year at 0, + 10, and 0 to 20 deg. F. in a 6-day cycle, pork roasts (loin) deteriorated noticeably at temperatures above 0 in 4 months, with the fat in incipient rancidity at that time. After 8- and 12-month storage periods, the fat was noticeably rancid, with high

PRODUCT OF THE MONTH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Open or enclosed impeller interchangeable without additional parts.
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Shims between bearing cover and pedestal provide adjustment for impeller wear without dismantling.
Handy supply of shims
One piece pedestal for greater rigidity.
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MILWAUKEE, WIS.—Production upped on Allis-Chalmers new *Process Pump* for pumping *both* corrosive *and* abrasive fluids. It incorporates advantages of double suction pump, yet retains simplicity and low cost of single suction design. Exceptionally rugged... easily accessible. Send for bulletin.

SPECIFICATIONS: Five sizes, capacities to 1,300 gpm; heads to 275 ft. Wearing parts available in special alloys to fit the application: *hard aluminum bronze* — for acidulous liquors; *Ni-Resist* — for alkaline liquors; *#316 stainless* for strong corrosive liquids with some abrasives; *18% chrome* — for abrasive liquors that are also corrosive.

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MAYBE you've been asking... is this the *finest* powdered sugar I can get? Would a finer powdered sugar save time—make creamier-textured sweets?

And the answer to all your *fine-sugar* questions is MICROFINE!

New, extra-fine powdered cane sugar made by the National Sugar Refining Company. Smooth. Splendid quality—the kind of quality that National's cane sugar is famous for. *A sugar so fine it will go through a 300-mesh screen!*

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peroxide values, while roasts held at 0 had these factors essentially unchanged. When scored for palatability, roasts stored at 0 deg. for a year were rated higher than those held at 10 deg. or fluctuating between zero and 20 deg., though scores for all roasts dropped during the storage period. Thiamine content of the pork was not appreciably affected by any of the methods of storage.

Palatability of strawberries was not affected by storage conditions, but their color was darkened. Ascorbic acid loss was about one-third of the original value in berries stored at 0; two-thirds for storage above zero.

Snap beans deteriorated rapidly above 0, becoming darker and less palatable. At 0, 30 percent of the ascorbic acid content was lost in one year's storage; above 0, about 80 percent was lost. Peas were less affected in palatability and ascorbic acid loss than the other foods tested, but hay-like flavors developed in one pack.

Digest from "Effect of Fluctuating Storage Temperatures on Quality of Frozen Foods", by W. A. Gortner, F. Fenton, F. E. Volz and E. Gleim, *Industrial and Engineering Chemistry*, vol. 40, 1423-26, August, 1948.

MICROBIOLOGY

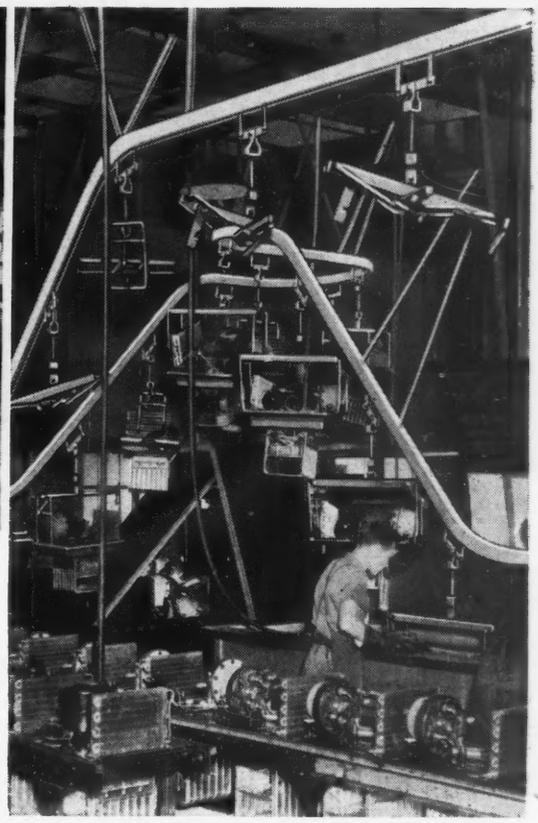
Bacteria in Precooked Frozen Foods

BACTERIA COUNTS of frozen foods, both total and coliform, often decrease sharply during storage. Bacteria seldom disappear entirely, however, and freezing cannot be expected to act as a "pasteurization" process that will counteract faulty and unsanitary production methods.

On the other hand, some types of precooked frozen foods may protect contained bacteria and lessen the bactericidal effect of deep freezing. In chicken chow mein, inoculated *Salmonella* species decreased in numbers rapidly for 14 days. Thereafter the population became stable, and 20 percent of the initial inoculum remained after 9 months storage at —14 deg. F. In commercial packs, high total and coliform counts were found, even after 3-4½ months storage. In chicken salad, a food not cooked prior to serving, hemolytic *Staphylococci* counts as high as 14,000 were found after 62 days in deep-freeze storage.

Coliform counts made on violet red bile agar must be interpreted cautiously. Cold storage makes many viable organisms unable to overcome the resistant action of the medium. By inoculating sterile samples with coliforms, and later plating on violet red bile agar and tryptone glucose extract agar as well, it was shown that only

Eggs or Electrical Appliances . . .



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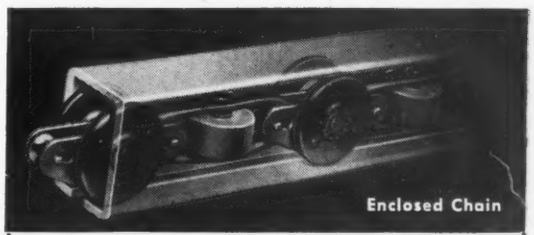

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Two lbs. of Oil Thyme MM&R is the equivalent of 100 lbs. of dry spice. So of course you conserve storage space, facilitate handling, when you use Spice Essential Oils. In addition, bottled Spice Oils assure against the introduction of foreign bacteria or other contaminating substances.

And that's not all — highly concentrated Spice Essential Oils are more economical . . . provide uniform distribution of wholesome flavor without color disturbance.

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1. Uniformity of quality and flavoring
2. No color disturbance
3. Less bulk in storage
4. Less weight in shipping
5. No danger of molding
6. No loss by exposure in package while being stored
7. No starch introduced into your mixture
8. Ease of handling
9. Less cost as compared to equivalent spice value
10. Entire flavor available immediately
11. Elimination of the possibility of dust and dirt

Send for "Table of Equivalents" Showing Comparative Flavoring Strengths of Whole Spices and Spice Oils

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Los Angeles: Braun Corp. • Seattle, Portland, Spokane: Van Waters and Rogers, Inc.
San Francisco: Braun-Knecht-Heimann-Co.

12-25 percent of the viable coliforms were able to initiate growth on the former medium.

Digest from "Survival of Bacteria in a Precooked, Fresh-Frozen Food", by M. F. Gunderson and K. D. Rose, *Food Research*, vol. 13, 254-63, May-June, 1948.

VITAMINS

Sweet Potato Carotene

DESCRIBED as commercially feasible, a simple method has been devised for the preparation of beta-carotene from the Porto Rico variety of sweet potato. An oil concentrate of beta-carotene is also recovered as a byproduct, which is a more potent source of vitamin A than most commercial fish liver oils.

Raw sweet potatoes are shredded, dried, ground to 40-mesh, and extracted in a steam-jacketed percolator with hot Skellysolve B. The extract is concentrated by distillation, and the concentrate is further distilled under reduced pressure in an atmosphere of nitrogen. The carotene crystallizing from this extract is further purified by crystallization in hexane. The pure beta-carotene is suitable for use as a laboratory standard and in fortifying human food.

In the course of the experiments, it was found that blanching of sweet potatoes prior to drying caused a marked increase in destruction of carotene during dehydration. It was also found that sweet potato leaves were similar to other leafy material in content of carotene and xanthophyll.

Digest from "Beta-Carotene from Sweet Potatoes," by W. C. Sherman and C. J. Koehn, *Industrial and Engineering Chemistry*, Vol. 40, 1445-48, Aug. 1948.

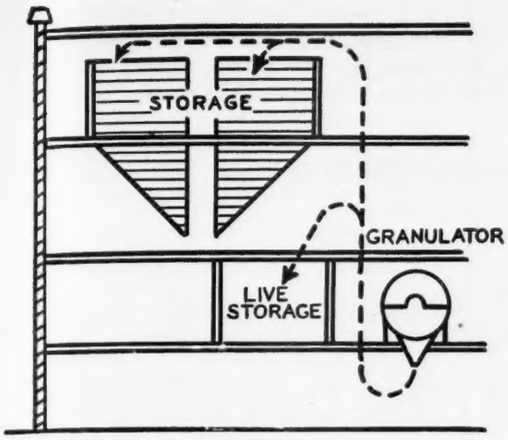
MISCELLANEOUS

Preserving Fresh Eggs

PENTANE-MINERAL OIL mixtures are very efficient in preventing quality losses in shell eggs during storage. Other petroleum solvents are not as effective for diluting the processing oil. The relative effectiveness appears to be inversely proportional to the molecular weight of the solvent.

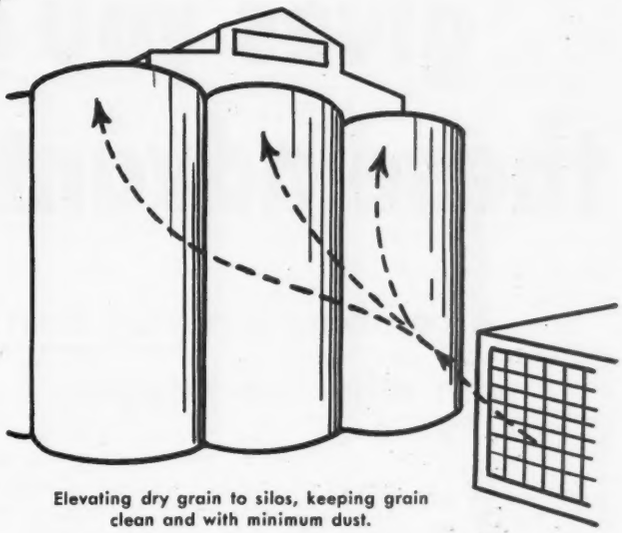
Results of a study to determine the effect of certain solvent-mineral oil mixtures on the retention of quality of shell eggs stored at room temperature and at 30 deg. F., showed that as little as 1-2 percent oil in pentane greatly minimized quality changes in the thick white. Ten percent oil in pentane gave practically the same protection as did oil itself, yet the eggs were virtually free of "shine" within a few hours.

Carbon tetrachloride behaved similar-



Elevating sugar from granulator to storage bins cleanly, without spillage.

BULK MATERIALS HANDLING TAKES KNOWLEDGE • EXPERIENCE • FACILITIES



Elevating dry grain to silos, keeping grain clean and with minimum dust.

The Problem's Half Solved When You Find Somebody Who UNDERSTANDS

When you talk with a Stephens-Adamson engineer, you'll find he is *qualified.* He *understands.* He has worked out hundreds of material handling problems for others. He has at his disposal the "case histories" as well as the men who did the planning on many more S-A engineered jobs.

Of equal importance, our engineers are not restricted to one or two types of equipment. The S-A Line includes a complete range of belt conveyors, bucket elevators, Redlers, skip hoists and other equipment. Your troubles can be overcome by the *one best combination.*

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ly to pentane, and acetone behaved like the high molecular weight hydrocarbons. For all around keeping quality, it was recommended that eggs be oiled approximately 18 hr. after laying.

Digest from "Factors Influencing the Efficiency of Solvent-Oil Mixtures in the Preservation of Shell Eggs," by Geo. F. Stewart and S. Bose, *Poultry Science,* 27, 3, May, 1948.

Crunchy Food Product

CONFECTIONS, cookies and crackers, made from gelatinized starch paste suitably flavored or mixed with chocolate or other ingredients are described in a recent patent. Commercial starch paste ranging in concentration from 5-20 percent is gelatinized at 158-212 deg. F. and then frozen slowly at 32 to −4 deg. F. The frozen mass is then thawed, yielding a porous, spongy, highly absorbent material. This is dried to a moisture content of 2-15 percent at a temperature below that at which appreciable dextrinization would take place. The resulting product is rigid, porous and crisp, and is edible by itself. It can be molded under pressure, with or without the admixture of other edible materials, or comminuted to be added to icings, fondants, and the like to impart a crunchy texture. Combined with chocolate it may be formed into confections or used as a coating for other food products.

Digest from U. S. Patent 2,442,928, issued June 8, 1948, on an application dated March 23, 1945, to M. M. MacMasters and G. E. Hilbert, Peoria, Ill., and assigned to U. S. A.

Egg White Heat Stability

SUCROSE and other sugars exert a very beneficial effect on the retention of leavening power of egg white when subjected to heat. The protective action is one of raising the temperatures, or increasing the time, before the adverse effects of heat are noted. It is not a matter of preventing them altogether.

Decreasing pH from 8.5 to as low as 6.5 likewise increases the stability of egg albumin to heat. Lowering pH and adding sugar prior to heat treatment are not complementary, however, since sucrose does not increase the heat stability after the pH has been lowered to obtain optimal effect.

Studies were made on the effect of various heat treatments on the leavening power of egg white, and of several methods of minimizing this effect. The criteria of leavening power were the beating rate of meringue and the volume of angel cake. Results indicated that deleterious effects occur if albumin is heated above 138 deg. F. momentarily, or to as low as 105 deg. and held for a sufficient period of time.

Digest from "Factors Influencing the Effects of Heat-Treatment on the Leavening Power of Egg White," by H. M. Slosberg, H. L. Hanson, Geo. F. Stewart and B. Lowe, *Poultry Science,* 27, 3, May 1948.

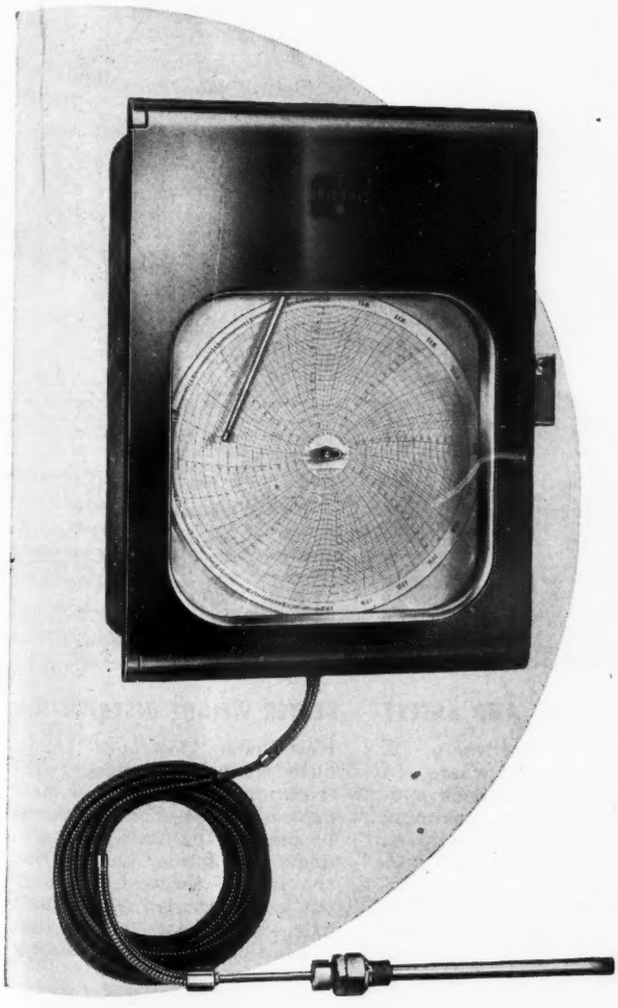
Bristol Presents

New developments in

RECORDING THERMOMETERS

Entirely new design throughout

Far-Reaching Improvements in Dependable Accuracy and Durability



Bristol's new Series 500 recording thermometers — designed to give you everything you've ever wanted in recording thermometers

Bristol, originator of the pressure type or bulb-and-tubing type recording thermometer, now brings you the new Series 500 instruments in various temperature ranges from -125°F. to 1000°F.—incorporating every conceivable improvement to make them:

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Convertible Bulb . . . easily converted from plain to union or socket types. Perfectly sealed by induction-heated sealed joints.

Linkage . . . flat, strong, adjustable links with polished, stainless steel pins provide sturdy, friction-free connection between measuring element and pen arm mechanism. Easily removed without tools. Measuring-element link arm is adjustable (micrometer type).

Pen Arm Mounting . . . pivoted in stainless steel journals. Shaft supported in rigid, one-piece mounting. Ground and polished stainless steel journals are anti-friction, corrosion-resistant. Backlash and lost motion are eliminated.

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Convertible Case Design . . . offers maximum protection to working parts. Is moisture-, fume- and dustproof. Styled for modern beauty to harmonize with other modern instruments and machines. Can be wall, panel or flush mounted, easily convertible.

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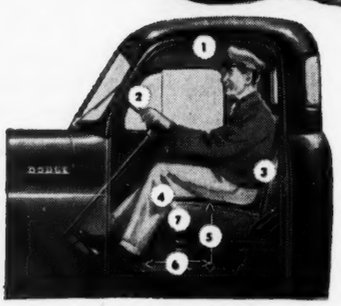

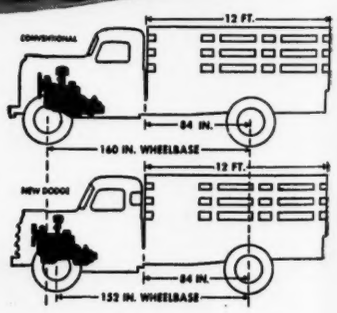

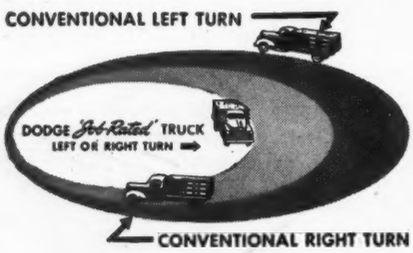

SHORTER TURNING DIAMETERS

New Dodge *"Job-Rated"* trucks provide an entirely new ease of steering and handling. You can turn in much smaller circles, right and left, because of a new type of "cross-steering," plus shorter wheelbases and wider tread front axles.

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BETTER WEIGHT DISTRIBUTION

New Dodge *"Job-Rated"* trucks have *much* better weight distribution. You can haul *more payload*. This has been achieved by moving the front axle back, *under* the frame, and moving the engine forward. More of the load is carried on the front axle. Wheelbases are shorter . . . but cab-to-rear-axle dimensions are unchanged.

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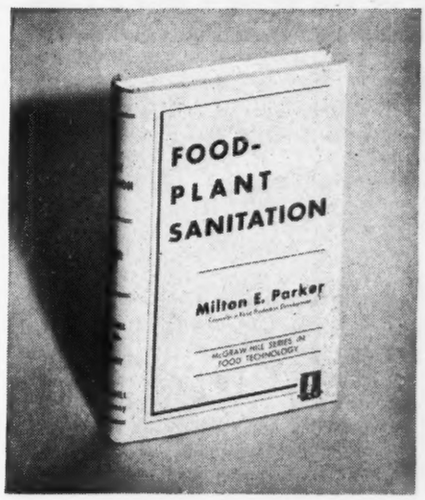
Visit the Big Dodge "Job-Rated" Truck and Equipment Show, Madison Square Garden, New York City, November 18-21, 1948

BOOKS

Sanitary Practice

FOOD-PLANT SANITATION. By Milton E. Parker. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York 18, N. Y., 1948. 447 pages 6¼x9¼ in.; cloth. Price, $6.



Here is another volume in the publisher's tailor-made series for the food industry. Since sanitation is involved in every step of food processing, the book considers practically the whole of food manufacturing operations. The book discusses sanitation problems in buildings and equipment, analyzes methods of waste disposal, and outlines a program for setting up and maintaining sanitary practice among personnel. It also describes safe methods of insect and rodent control, effective plant layout, and selection of proper packaging material.

Initially, preparation of this book was recommended by an advisory board of food technologists—of which the author is a member—and the finished job has been approved by that board, hence its value is practically a foregone conclusion. Specifically it is in the study and practical application of the practices outlined that the food manufacturer, large and small, will gain by the book's publication.

Meat Products

SAUSAGE AND SMALL GOODS PRODUCTION. By Frank Gerrard. Published by Leonard Hill, Ltd., 17 Stratford Place, W. 1, London, England, 1948. 203 pages; 5½x9¼ in.; cloth. Price, 15s.

This is an interesting treatise on the manufacture of sausage and kindred products in England. The book describes the necessary equipment in detail and offers recipes as well as step-by-step procedure in both the production of the various products and in the preparation and storage of the ingredients.

Plant Location

THE LOCATION OF ECONOMIC ACTIVITY. By Edgar M. Hoover. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York 18, N. Y., 1948. 310 pages; 6½x9¼ in.; cloth. Price, $3.75.

Plant location has always been a serious consideration in the food industry, and never more so than in recent years. This book aims to organize a group of principles on space as it relates to economic activities. It considers such factors as the relative advantages of different types of location from the standpoint of the individual producer. In this discussion, production costs and accessibility to supplies of raw material and to markets are fully considered.

The author analyzes the causes of locational change, the ways in which such changes occur, and the stresses and maladjustments that may accompany the change. The locational effects of technological changes, especially improvements in transportation and the use of energy, are evaluated. This section also offers factual evidence of overall trends of industrial and population shifts, pointing out some of the leading problem areas.

Consumer's Book

FOODS, PRODUCTION, MARKETING, CONSUMPTION, 2nd Edition. By Jean J. Stewart and Alice L. Edwards. Published by Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y., 1948. 490 pages; 6½x8¼ in.; cloth. Price, $6.35.

This book attempts to cover the whole food front for the consumer, and it manages to skim over a great deal of territory in so doing. It holds little interest for the food processor except, possibly, as recommended reading for the beginners in his plant.

Fish Data

YEARBOOK OF FISHERIES STATISTICS 1947. Food & Agriculture Organization of the United Nations, Washington, D. C., 1948. 334 pages; 9x12 in.; paper. Price $4.00. (Order from International Documents Service, Columbia University Press, 2960 Broadway, New York 27, N. Y.)

This is a survey of international production and foreign trade in fisheries products and related industries for all countries of the world from 1930 to the most recent year for which information is available. Outlined by

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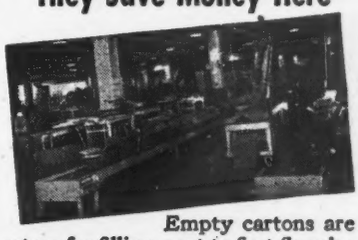
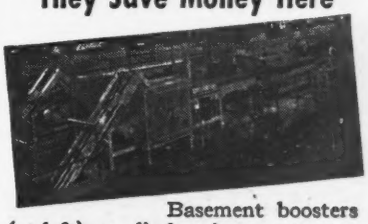


Empty cartons are set up for filling, sent to first floor by Lamson Belts and Boosters.

They Save Money Here



Basement boosters (at left) are discharging empty cartons to a horizontal filling belt on first floor.

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countries and by fish or fish products are total landings, imports, exports, and other related data.

Being the first such international publication, classifications had to be established to provide adequate coverage of data based on a wide variety of languages and units of measure. Metric units were adopted in conformity with FAO practice.

Although this publication is "regarded as a preliminary experiment," an excellent beginning has been made. It is hoped that there will be acceptance of the invitation to various governments to supply missing information and bring the tables up to date for the next issue.

GOVERNMENT PUBLICATIONS

UNION WAGES AND HOURS IN THE BAKING INDUSTRY July 1, 1946. Bureau of Labor Statistics, Bulletin 914. Price 20 cents.

OUTLINE OF GROUND-WATER HYDROLOGY WITH DEFINITIONS. By Oscar E. Meinzer. U. S. Geological Survey Water-Supply Paper 494. Price 20 cents. A reprint of material long out of print. Gives broad descriptive details valuable for food technologists because it is not too technical.

COTTONSEED HANDLING WITH SMALL AIR PIPES. By Charles A. Bennett and Gerald N. Franks. U. S. Department of Agriculture, Circular No. 768. Price, 5c. Method applicable also to other air-handling problems.

MILITARY PROCUREMENT. The Munitions Board. Price 25c. A guide for joint industry-military procurement planning.

ARMED SERVICES PROCUREMENT REGULATION. Departments of the Army, Navy, and Air Force. May 19, 1948. Price 25c. A manual of procurement procedures to guide the military staff and would-be sellers to the Government.

THE SMALL BUSINESSMAN AND HIS FINANCIAL STATEMENTS. By Gerald M. Francis. U. S. Department of Commerce, Economic (Small Business) Series No. 70. Price 15 cents. A draft of recommendations intended primarily for the "small businessman".

SURVEY OF FRUIT AND VEGETABLE CANNERS AND FREEZERS. Office of Temporary Controls, OPA Economic Data Series No. 24. Price 10 cents. Combined operating statements by type and size for the United States and by geographic areas, 1944 and 1945.

Documents are available, at prices indicated, from Superintendent of Documents, Government Printing Office, Washington 25, D. C. When no price is indicated, pamphlet is free and should be ordered from Bureau responsible for its issue.

PATENTS

Coffee Beans Roasted in Stream of Hot Gas while in Contact with Heat-Conducting Surface for from 75 Sec. to about 3 Min. at 500 to 800 Deg. F.—J. W. Hubbard, New York, to Alaska Pacific Salmon Co., Seattle, Wash. No. 2,443,620. June 22, 1948.

Citrus Fruit Wrapped in Preservative Tissue Impregnated with Solution of Paraffin in Mineral Oil Containing between 0.6 and 1.8 Percent of Alpha Terpineol—J. R. MacRill, Ontario, and R. A. Baum, Claremont, Cal., to Fernstrom Paper Mills, Inc., Pomona, Cal. No. 2,443,795. June 22, 1948.

Glycerol Substitutes Made by Electrolyzing Water Solution of Sodium and Potassium Salts of DL-Beta-hydroxybutyric Acid—K. H. W. Tuerck, Banstead, and H. J. Lichtenstein, London, England, to The Distillers Co., Ltd., Edinburgh, Scotland. No. 2,443,843. June 22, 1948.

Fruits Mechanically Pitted During Continuous Passage through Pitting Machine—C. M. Lindley, Jr., Empire, Cal. No. 2,443,863. June 22, 1948.

Sliced or Diced Raw Apples Prepared for Freezing with Retention of Natural Color, Bouquet, and Flavor by Subjection to High Vacuum of not over 24 In. of Mercury for not more than 15 Min. While Submerged in Brine—H. A. Noyes, Watertown, Mass. No. 2,443,866. June 22, 1948.

Concentrates of Plant Juices, Extracts, and Infusions Prepared from Weak Solutions by Freezing to Remove Solvent in Crystal Form at Temperature Slightly Above Freezing Point of Concentrate—H. A. Noyes, Watertown, Mass. No. 2,443,867. June 22, 1948.

Chocolate-Coated Confections and Cookies or Biscuits Positioned on Plaques and Traveling on Endless Tray Conveyor Mechanically Discharged at Packing Station and Plaques Mechanically Replaced in Trays on Endless Conveyor and Returned to Loading Station—J. E. Pointon and A. A. Tunley, Peterborough, England, to Baker Perkins, Ltd., Peterborough, England. No. 2,443,868. June 22, 1948.

Starch Extracted from Sweet-Potato Slurry by Liming, Centrifuging and Screening in Successive Steps—G. M. Dexter, Scarsdale, N. Y. and F. H. Thurber, Washington, D. C.; Thurber to United States of America and Dexter to United States Sugar Corp., Clewiston, Fla. No. 2,443,897. June 22, 1948.

Ascorbic Acid Essentially Free of Hydrohalic Acid Recovered from Mixture of Ascorbic and Desoxy Ascorbic Acids in Aqueous Hydrohalic Acid Solution—H. H. Bassford, Jr., Elizabeth, N. J. to Merck & Co., Inc., Rahway, N. J. No. 2,444,087. June 29, 1948.

Eviscerated Pre-Roasted Fowl Filled with Hot Edible Gelatinous Filler and Cooled at Atmospheric Pressure to Preserve Original Natural Roasted Appearance and Flavor—J. A. Zublin, Saugus, Cal. No. 2,444,127. June 29, 1948.

Corn Steepwater Treated for Use as Nutrient for Penicillin Production—M. J. Thomas and R. F. Larson, Decatur, Ill., to A. E. Staley Mfg. Co. No. 2,444,176. June 29, 1948.

Citrus Fruits Compressed by Rotatable Drum against Perforated Plate to Extract Oil-Free Juices—R. B. McKinnis, Winter Haven, Fla. No. 2,444,203. June 29, 1948.

Flour-Enriching Mix Made to Consist of Free-Flowing, Fat-Free, Low-Moisture Ashless Starch Filler, Talc, Tri-Calcium Phosphate, Mono-Calcium Phosphate, Vitamins B_1, B_2, and D, Niacin and Assimilable Iron—R. S. Whiteside, Scarsdale, and P. V. Kolb, Rye, N. Y., to Winthrop-Stearns Inc., New York. No. 2,444,215. June 29, 1948.

Coffee Beans Heated in Closed Vessel for Several Days at 140 to 150 Deg. F. under Sub-Atmospheric Pressure Preliminary to Displacing Residual Air by CO_2 and Roasting Beans for 21 to 22 Min. at Pressure of 200 Lb. per sq. in.—A. L. Armentrout, Long Beach, Cal. One-half to R. B. Coffman, Long Beach, Cal. No. 2,444,217. June 29, 1948.

Soya Whipping Agent Obtained by Extracting 20-Percent-Oil-Containing Soybean Material with Ethyl Alcohol—A. C. Beckel and L. I. De Voss, Peoria, P. A. Belter, Pekin, and A. K. Smith, Peoria, Ill., to United States of America. No. 2,444,241. June 29, 1948.

Pectinic Acids of Low Methoxyl Content Obtained from Citrus Peel—H. S. Owens and W. D. Maclay, Berkeley, Cal. to United States of America. No. 2,444,266. June 29, 1948.

Glycerol Separated from Polyglycerol by Using Aliphatic Monohydric Alcohol as Solvent at Temperature Range in Which Glycerol is Miscible with Solvent—G. I. Keim, Newark, and John Ross, Ramsey, N. J., and J. H. Percy, New York, to Colgate-Palmolive-Peet Co., Jersey City, N. J. No. 2,444,296. June 29, 1948.

Glycerized Fats Given Improved Keeping Qualities by Emulsifying with Equal Proportions of Aliphatic Hydroxy Polybasic Acid and Aromatic Para-Hydroxy Monobasic Acid Ester—F. H. Penn, Dallas, Tex. No. 2,444,307. June 29, 1948.

Anti-oxidant, Nordihydroguaiaretic Acid, Recovered from Plant Extracts—Ole Gisvold, to University of Minnesota, Minneapolis, Minn. No. 2,444,346. June 29, 1948.

Poultry Mechanically Plucked by Rotatable Disk Fitted with Resilient Plucking Fingers and Mounted on Swingable Frame—H. E. Drews, Ottumwa, Ia. One-half to Flournoy Corey, Cedar Rapids, Ia. No. 2,444,556. June 29, 1948.

Steer Bones Freed of Soluble Organic Material in Boiling Water, Tempered at 45 to 50 Deg. F., Drained, Dried and Baked Several Hours in Oven at 500 Deg. F. for Use as Purifying Agent—Francis Leslie, Springfield, N. J. No. 2,444,571. July 6, 1948.

Flavoring Sauce Made from Mixture of Soya and Other Vegetable Proteins by Hydrolysis with Strong Mineral Acid, Neutralized to 5.0 6.0 pH, Filtered before Addition of Salt and Caramel, Concentrated and Refiltered—H. Murata, to King Shoyu Co., Honolulu, Hawaii. No. 2,444,577. July 6, 1948.

Printed copies of patents are obtainable, at a cost of 25¢ each, directly from U. S. Patent Office, Washington, D. C.

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Salt usually cakes in excessive humidity, because moisture condenses on salt particles, forming a thin layer of brine. Then, in dry weather, the brine evaporates and the crystals knit together.

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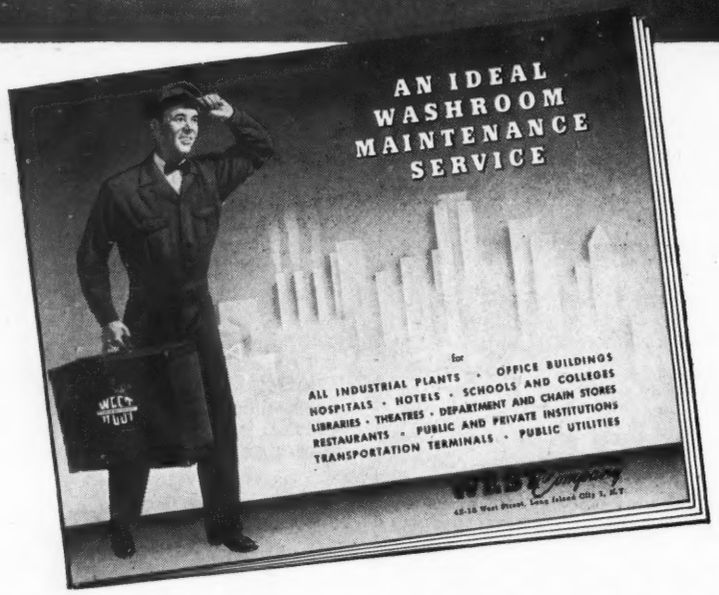

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POSITION_____

ADDRESS_____

Flavors Improved

(*Continued from page* 109)

direct relationship to the quantity of the component under consideration in the food. The results of many studies based on this concentration-taste relationship have established a large number of threshold levels for specific substances.

Blakeslee[23] reported some interesting results obtained at a dinner where he studied a large number of individuals' reactions to unusual odors and flavors. He concluded that training influences human perceptions and behavior to flavor and that individual differences in judgment should be studied critically.

Several basic test foods, useful in testing flavor adjuncts, have been developed in our laboratories. Three of these special foods—an oil-white sauce, a white sauce without oil, and a pumpkin mixture—are described in a box accompanying this article.

Vitamins Add to Flavor

An apparent correlation exists between foods with especially appealing flavor and foods high in auxiliary nutritional factors. Because these foods taste better, due to their high vitamin or other augmenting nutrient content, they stimulate greater consumption and a better diet.

Beneficial self-selection[24] has been known to occur in the diet of a child needing vitamin D to overcome rickets. The child, given a variety of foods to choose from, selected foods helpful in curing this nutritional deficiency disease. Hockett reports that taste and flavor appeal are not mere luxuries but lead to beneficial choice of helpful foods.

Experimental animals have been found to choose essentials from pure solutions of the nutrients and from available quantities of foods of higher nutrient value in preference to foods of moderate nutrient value.

Vitamins in the volatile component of a food enhance the attractiveness of a food by contributing to the more pleasant flavor of the food. Ascorbic acid has a pleasant, slightly acid flavor of its own, and is believed to carry over into the aroma of a food and to be detectable in the odor. When tasted, a food high in ascorbic acid has this desirable, mildly acid taste.

It is known that ascorbic acid will stabilize food flavor, preventing undesirable flavor changes by its anti-oxidant ability. Fruits do not discolor so readily when treated with ascorbic acid. Such discoloration accompanies off-flavor production. Various oil processing technics include ascorbic

acid treatment for flavor stabilization.

Paprika, used widely in the diet of many, contributes large amounts of ascorbic acid to the diet. Gyorffy and Patka[35] have determined the contents of several varieties. They range from 187.5 to 372.3 milligrams percent. Hungarian foods, pleasing and aromatic, are stable in flavor and bodied by the presence of this spice. This is only one example of the use of a spice of high ascorbic acid content adding to the flavor of foods.

Alpha-tocopherol is a biological antioxidant. It may also act to stabilize the flavor components. Heftman[36] has pointed out that the tocopherols in carrot oil protect the anti-oxidizable substrate as carotene is protected from oxidation. Carotene, contributing color, adds to the attractiveness of a food, and may also contribute to the volatile flavor-component. Wheat products, especially those high in wheat germ content, are flavorful and may owe this factor to the stabilized flavor aided and protected by the tocopherols.

Finally, let us consider thiamin. There is no question that this vitamin has an easily detectable odor. The thiazole part of the molecule is no doubt the major aroma factor, but the other parts of the molecule may contribute to the readily detectable thiamin odor. Meisel and Medvedeva[37] point out that the thiazole component, or even the thiamin itself, passes into the air from solution or solid state, and can aid the growth of organisms, such as molds, in a nearby aqueous media.

This thiamin odor, a component in the aroma of foods such as pork or wheat products, plays a part in making these foods more desirable and results in their being consumed in larger quantities. Thereby, the thiamin intake is beneficially increased. Many nuts are high in thiamin and have an attractive flavor, due to the odor of thiamin.

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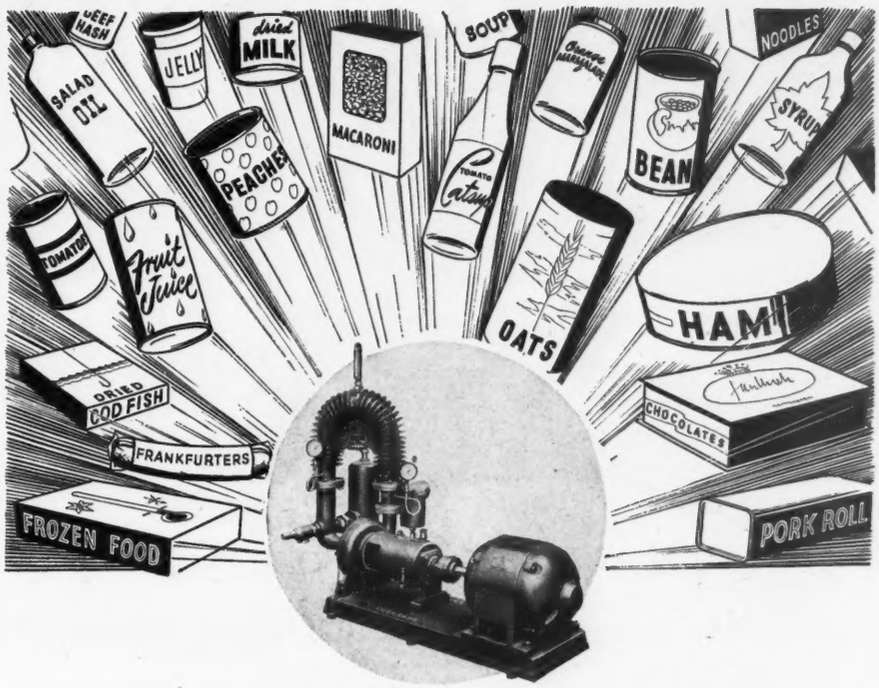

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Of course there are cases in which the long, slow simmering of a food product improves its flavor, but generally speaking, *faster heating* means *better eating.*

And improved flavor isn't the only advantage, either. Steam cooking systems equipped with Cochrane C-B Systems of high pressure condensate return have recorded savings as high as 16% on fuel, increased cooking kettle production as much as 50%, lowered labor costs by 22% and in practically all cases, have improved the quality of the food product.

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Late one night last spring one of our engineers received a hurried call from a large chocolate manufacturing concern. The company had received one hundred carloads of cocoa beans by marine shipment, only to discover that, due to a serious error in loading, the entire lot was contaminated with cerussite (lead carbonate occurring in colorless transparent crystals) the most poisonous of all lead ores.

The Food and Drug Administration detained the shipment and the receiving company was faced with the immediate prospect of destroying it unless an economical method of reconditioning and salvaging could be devised. (To be acceptable, the cocoa beans could not show more than 2/100ths of one grain of lead to be present per pound of cocoa beans).

Our S S & S product engineer recommended that the beans be scrubbed first. However, this operation could not be depended upon to remove wormeaten beans which might contain lead in the worm holes. The beans were then put over an S S & S Specific Gravity Separator which graded out the product according to particle density. Thus, by effecting a super-sensitive separation of the lighter contaminated beans from the heavier usable ones, over 90% of the one hundred carloads was recovered and passed after stringent inspection by the Food and Drug Administration.

**Third in a series of actual case histories describing the use of S S & S equipment to clean, reclaim, and up-grade agricultural products previously classified as being below commercial standards.*

The Case Of The "Cerussited" Cocoa Beans was no mystery to S S & S product engineers. Every hour in every day you'll find our Specific Gravity Separators and Air-Float Stoners serving the food industry with economical high-volume separations on virtually every type of product destined for human consumption. With 99.9% of heavy contaminations *(both magnetic and non-magnetic)* removed, processing equipment wear-and-tear is reduced; end products are upgraded to premium quality; hand-picking costs diminish toward a vanishing point. If you've got a tough separation or reclamation problem, let an S S & S product engineer have a crack at it. Check the details in our Bulletin FI-1148.

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—End—

Mead Industry

(*Continued from page* 112)

honey as produced by the Benedictine monks of Buckfast Abbey in Devon and the Salisbury plain clover honeys culled from around Stonehenge, to the more highly flavoured Australian "light amber" types.

Only the best vats of mead are retained as wines. The remainder are turned into a first class, high alcoholic content brandy. From this, in turn, is made the mead liqueurs, by the addition of the many aromatic herbs which make up the mediaeval herbal formula for gruit.

Just as from the grape there are various strengths of wine, so with mead, depending on the density of the honey used. In general, mead takes about 350 lb. of honey for 100 gal. Sack mead and sack metheglin (other

fermented honey drinks) take 550 lb.

It should be emphasized that meads are high quality liquors. Consequently, the output of the Mead House is not comparable with that of a brewery. It is, however, not insignificant. The plant will be producing about 25,000 imperial pints (30,000 U. S. pints) a month.

The alcoholic content of mead, because of the special yeasts used, is naturally high and fortification is not necessary. Mead reaches 14 percent alcohol by volume, and sacks as high as 18 percent.

In taste and qualities, meads resemble hocks and moselles. Sparkling meads are rather like champagne, while sack meads taste like imperial tokay. Sack metheglins are the mead equivalents of vermouth. In addition to these types, Mead House produces the pyment and cyser of which Chaucer wrote, and melomel, a Roman mead not manufactured since the time of Nero.

—End—

Meat Packing

(*Continued on page* 102)

operating conditions found. There are a number of good materials, however, which can be applied to existing floors in areas where processing operations cause excessive slipping hazards. Though these materials require frequent renewal, they are considered the best answer thus far. Some of these materials are treated fabrics coated with grains of anti-slip material. They are bonded to the existing floor surface with special adhesives. Other materials are special coatings applied directly to the floor.

New Research Facilities

The American Meat Institute Foundation is completing a three-story-and-basement building on the campus of the University of Chicago for housing a staff of scientists, including research and analytical control chemists and bacteriologists. The Foundation will also have access to the facilities of the University and the counsel of its scientists on highly specialized problems.

Equipment will be donated by manufacturers servicing the industry. This equipment will enable practical operation on a pilot plant scale of many plant processes, and the testing of any procedures developed in the laboratories of the Foundation. There will also be chill rooms and freezers for storing product.

The Foundation is a non-profit organization, supported by voluntary contributions from members of the meat packing and allied industries. It is organized for the purpose, among

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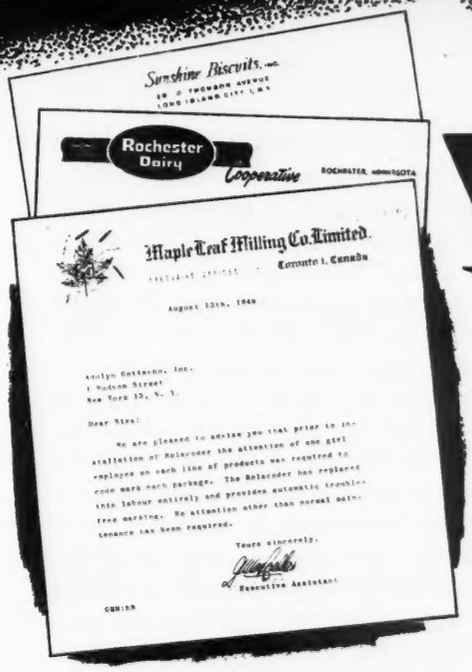

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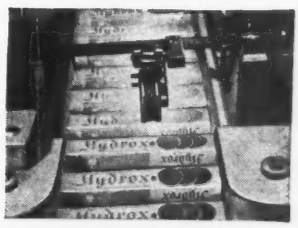

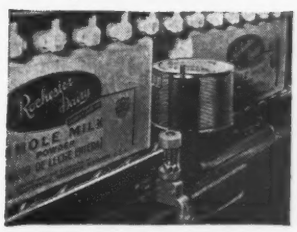

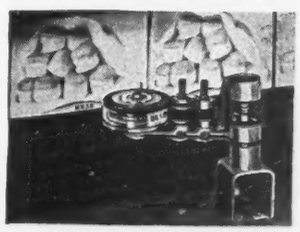

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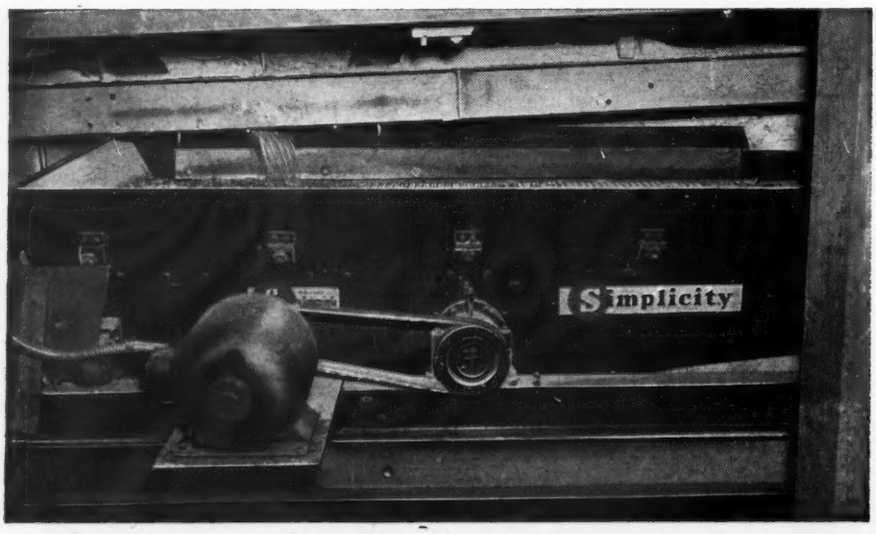

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other things, of engaging in educational activities and scientific research in the field of livestock production and utilization, including processing and use of all products derived from livestock. A cooperative effort in the public interest, in many ways unique in American industry, it will serve to keep the meat packing industry abreast of general progress.

—End—

Ritter's Mutual Trust

(*Continued from page 76*)

man-hours, it was not possible to compare the two over a period of years. New products have been added, and production records are kept in terms of total cases of goods produced. The cases vary greatly in size.

The records did permit comparisons of single production lines on which the same products were made through a period of years. On one of the most important lines, the labor cost per case during 1947 was 10.7% less than the average of the three previous years. Production increases have more than kept pace with wage increases and have lowered overhead. Of course, advances in industrial engineering are credited with helping to raise production. However, the efficiency of industrial engineering improvements depends on the efficiency and effort of labor.

Union Foremen

During the seasonal peaks of production, there is greater need for foremen and supervisors than at other times. Seasonal foremen and supervisors are selected from the membership and retain union status. Some of them return to the ranks of labor when the peak periods are over.

All foremen and supervisors, even those who held their rank before the company was unionized, are required to belong to the union—except where such membership is prohibited by the Taft-Hartley law. More than half of the 43 foremen and supervisors are union members.

During the time they are in supervision posts, they participate in employee rating of those under them. These foremen and supervisors, after seasonal peaks when they are shifted back to the labor status, may in turn be rated by other foremen and supervisors.

While serving as seasonal foremen or supervisors, they have proved most conscientious in giving employee ratings to others. Bill Ritter says foremen and supervisors who belong to the union have proved efficient and have used good judgment, especially in handling labor problems.

Foremen Rating

Deficiencies and inefficiencies of labor often reflect the weaknesses of management, and a major weakness may be in the supervisory structure. Foremen and supervisors can, and have, thrown labor out of gear. They are often the only management representatives that labor contacts.

Ritter's realizes the importance of the supervisory group to plant efficiency and labor relations. Not only does the company conduct supervisor and foreman training courses, but it goes a step further. If employee rating has improved efficiency and bettered understanding, why not a foreman rating? Supervisors and foremen now are rated monthly the same as hourly paid workers. They are rated by the superintendents on forms which are more detailed than those used for workers.

The company insists that its foremen, supervisors and executives, too, understand the worker's viewpoint. Every executive concerned with production, from the president and the director of employee relations down, started in with the company as a laborer.

Summing It Up

Earl McCormick, director of employee relations, summed up the net results of the eight years with the union under the labor relations plans which Ritter introduced:

"Our set-up is not perfect. We still have differences. Sometimes the discussions in the labor-management meetings become quite heated. But they never get out of hand, because the machinery is set up so that a satisfactory agreement can be reached quickly."

At the conclusion of bargaining on the last union contract, the union president told management that the sizable rate increase agreed on did not have to be an expense to the company, nor would it all come out of profits. He said he felt the membership would compensate with increased production.

Bill Ritter's own summary is plain and simple:

"We speak of labor relations. I think that is a misnomer. When Bill West has a grievance, real or imagined, management must deal with Bill West. If Harry North and Jim South have the same complaint it makes no difference. Management must deal with the individual, either directly or through his chosen representative. It seems to me not a matter of labor relations, but simply *human relations*. We have tried to plan ways of dealing as directly as possible with Bill, Harry and Jim on a personal relations basis. We believe we are much better off today than we ever were before."

Stop Losses from Insects

...Use the "ENTOLETER" Continuous Control System for Plant and Product Cleanliness

Operating records prove that "ENTOLETER" Continuous Control destroys all forms of insect life. In addition to this service, mills and food plants are reaping other benefits from the "ENTOLETER" system. Here are three positive advantages.

1 KILLS ALL INSECT LIFE

Now, more than ever, your plant and products need the "ENTOLETER" system of continuous insect control. It helps you to avoid waste of scarce food materials . . . to protect product ingredients . . . to insure the high standards of your products.

2 ESSENTIAL IN FRAGMENT CONTROL

The "ENTOLETER" system is being used successfully to reduce fragment count. Send for a copy of our latest bulletin describing methods of application.

3 AIDS PRODUCT UNIFORMITY

Food plants and flour mills have found that the "ENTOLETER" system offers an excellent means of blending flours, mixing ingredients in compounds and improving vitamin distribution. This, alone, more than justifies its cost.

For Bulletin on "ENTOLETER" Continuous Insect Control System, write to ENTOLETER DIVISION, The Safety Car Heating and Lighting Co., Inc., P. O. Box 904, New Haven 4, Connecticut.

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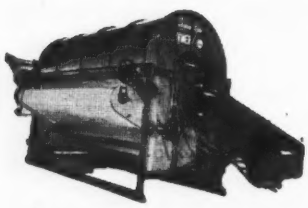

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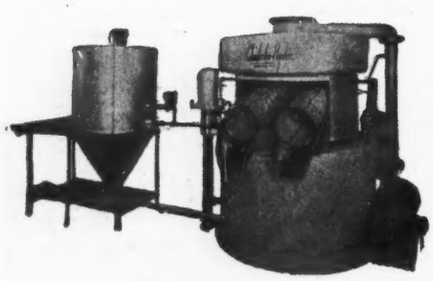

The exclusive patented Spiral in the CRCO Quality Grader insures a better and faster separation of peas and limas according to their specific gravity—thus recovering a greater percentage of the tender or fancy product than any other type of grader. Any desired separation is easily secured by varying the density of the brine stream.

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Rice Coating Process

(*Continued from page* 97)

Outcome of the work in the Philippines will undoubtedly have a bearing on future remedies for nutritional problems of India, China, Burma, Indo China, Japan and Malaya. In India, there is a partial answer in parboiling which is widely used although not in all areas. The rice is usually steeped at rural mills and sun dried before milling. The use of enrichment premix may become important where parboiled rice is not accepted.

The problems of South China are quite similar and studies of corrective measures have been in progress there for some years. It has recently been proposed that a rice conversion process be made available through ECA for the Chinese population. Those supporting this move are advocating the adoption of the Malek process, one of the established conversion methods. Others claim that, in view of the high fuel requirements of a conversion operation, especially where the climate does not permit sun drying of the rice, the premix method is the one which should be preferred. The greatest obstacle to its use in Asia at present is the necessity for importing the vitamins from abroad.

—End—

Open-Type Building

(*Continued from page* 91)

floor. This particular operation could not be closed up without enclosing an entire area. In the sugar and starch packing structure, the only enclosed portion is the bagging area, a result of the fact that all sources of contamination had to be eliminated.

Many of the buildings have enclosed stair towers. These are provided for three principal reasons: (1) Fire protection for personnel; (2) they afford a retreat for personnel and a windbreak during the few inclement days during the year; and (3) they afford a location for elevators and toilet facilities, which are grouped in these towers.

The physical layout of the plant was predicated principally on the location of three principal structures. These included a large 2,000,000 bu. storage unit, the administration area and the power unit. The storage unit was located where it is suited for receiving grain by truck and train, with the possibility of a future marine leg to be utilized for ship unloading if the ship channel is completed and transportation by this method is economically feasible.

Inasmuch as large quantities of low pressure steam are used in the process, the shortest possible runs to production units were of major consequence. It was therefore decided to locate the power plant in the center of the project, along with the machine shops which also serve the entire area. The third group, the administration department, consists of a time and pay office, locker rooms, cafeteria, offices and laboratory.

Administration responsibilities are divided into two functions—timekeeping and production. The first deals exclusively with personnel, the second with production, hence these two functions were separated in the new plant.

The time and pay section was placed at the entrance of the plant, where it had easy access to the flow of personnel in and out of the area; the production administrative force, together with the control laboratory, is located near the center of the plant, overlooking Neuces Bay.

The remaining process layout follows in an orderly pattern from this point, with spacing considerations being given to fire protection and the possibility of future expansion.

—End—

Packaging Institute

(*Continued from page* 127)

idea and the so-called throwaway pallet are important practical steps in shipment problems.

If warehousemen could secure the full cooperation of customers and receive their products in the largest practical unitized load ready for mechanical handling, then present handling rates could be cut, in some cases as much as 2/3. Also, the service could be considerably speeded, and damage and pilferage reduced.

W. B. Lincoln, Jr., Inland Container Corp., reported that the shipper can aid in bringing about a reduction in damage claims by proper packing. He pointed out the shipper must recognize that proper packing is an important managerial responsibility. And management should know where the packing function fits into his organization.

Label Adhesives

At the seminar on adhesive problems, S. Carter, Economic Machinery Co., listed six procedures to follow in order to do a good labeling job. They are:

1. Inspect your bottle, placing emphasis on surface contours in order to get accurate label registration where the label is applied, and dimensional controls on that section of the bottle where the labeling machine contacts.

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Heating tanks and coils
Tubular heaters

And special machinery necessary for tomato processing

Corn Processing Equipment

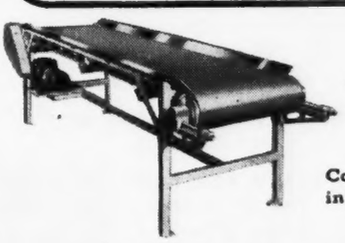
Corn silkers (high speed)
Corn mixers
Double batch corn mixers

And other equipment necessary for corn processing

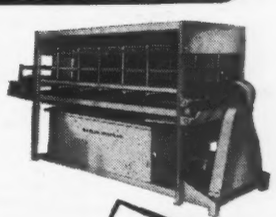
Pea Processing Equipment

Washers
Blanchers
Picking tables
Separators
Graders
Regraders
Elevators

And all equipment necessary for pea processing



New box washer - - self contained unit.



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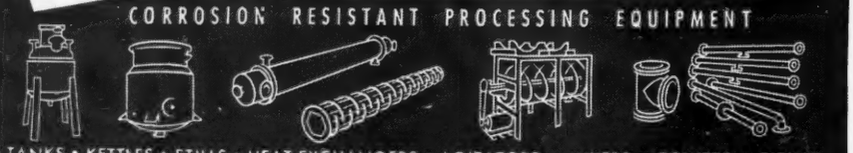
CORROSION RESISTANT PROCESSING EQUIPMENT



TANKS • KETTLES • STILLS • HEAT EXCHANGERS • AGITATORS • MIXERS • TOWERS • PIPING

2. Keep your labeler in good repair and keep it properly adjusted.
3. Prepare your labels before loading into the label hopper, and make sure the label holder is in good working order.
4. Follow your adhesive manufacturer's suggestion for the control and application of his product to your labeler.
5. Keep your pressure wipers in good working order.
6. Select a mechanically inclined operator.

In discussing adhesives and their properties, C. G. Caldwell, National Starch Products Co., told the packaging people of the current interest in synthetic resin thermoplastic or "hot melt" adhesives that can be adapted to direct application or precoated and activated by heat at the time of use. He said that these adhesives set at high speeds, resist water and mold growth, and can be used on non-porous surfaces.

Lloyd Perry, Nashua Gummed & Coated Paper Co., discussed the different adhesion problems attributed to various container surfaces, like metal, glass, paper, cloth, wood, synthetic organic material, and synthetic coating material. He went on to say that the quality of an adhering junction is sometimes influenced by the physical form of the surface and underlying structure. Such physical characteristics depend on whether the surface is porous or impermeable, smooth or rough, and whether the structure is rigid or flexible. Also important is the factor of cohesive strength, and whether the surface and underlying structure are a homogeneous mass or a composite structure.

A. I. Totten, Jr., Reynolds Metals Co., reported on some of the basic problems his company encountered in the development of adhesives for laminating paper to foil for general packaging purposes, and in devising a special foil sheet that can be sealed on a great variety of existing equipment.

Glass Container Tests

H. A. Wadman, Consultant, West Hartford, Conn., quoted breaking strength figures on glass containers. He said that the inside strength of a newly formed bottle, untouched by anything, was found to be at least 170,000 lb. per sq. in. This surface is very delicate, and almost anything done to it will weaken it. Rubbing it with lens tissue did not. However, rubbing it with toilet tissue reduced its strength to 100,000 psi. or to about 60 percent of the original value, while rubbing it with steel wool reduced it to 57,000, or about 35 percent of the original.

A similar set of tests on the outside surface of the bottle showed that it was initially much weaker, presumably because it was formed by being blown against an iron mold, while the inside

Warm air duct constructed of Apac.

Apac ceiling on industrial-type cafeteria.

Here... there... and everywhere

K&M "Century" APAC

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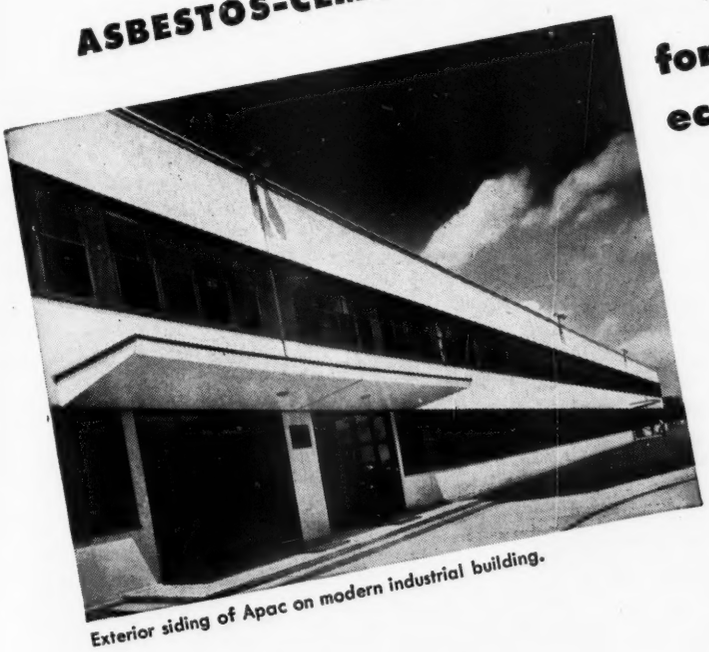

Exterior siding of Apac on modern industrial building.

You get long-lasting, economical construction when K&M "Century" Apac board is specified for new building, renovations or as a replacement material.

That's because Apac is made of tough asbestos fibers and Portland cement—a hard-wearing combination that resists fire, rodents, termites, rot, rust and weather. And Apac actually improves with age.

"Century" Apac is economical on any job. Initial cost is surprisingly low. Installation costs are low because Apac is easy to cut — just score it, and snap off; easy to apply—fastens in place with nails or screws; and easy to handle—comes in sheets 4′ x 8′ and in thicknesses of 3/16″, 1/4″ and 3/8″.

For further information on how "Century" Apac can help solve your special problems, write direct to us. Your inquiry will receive prompt attention.

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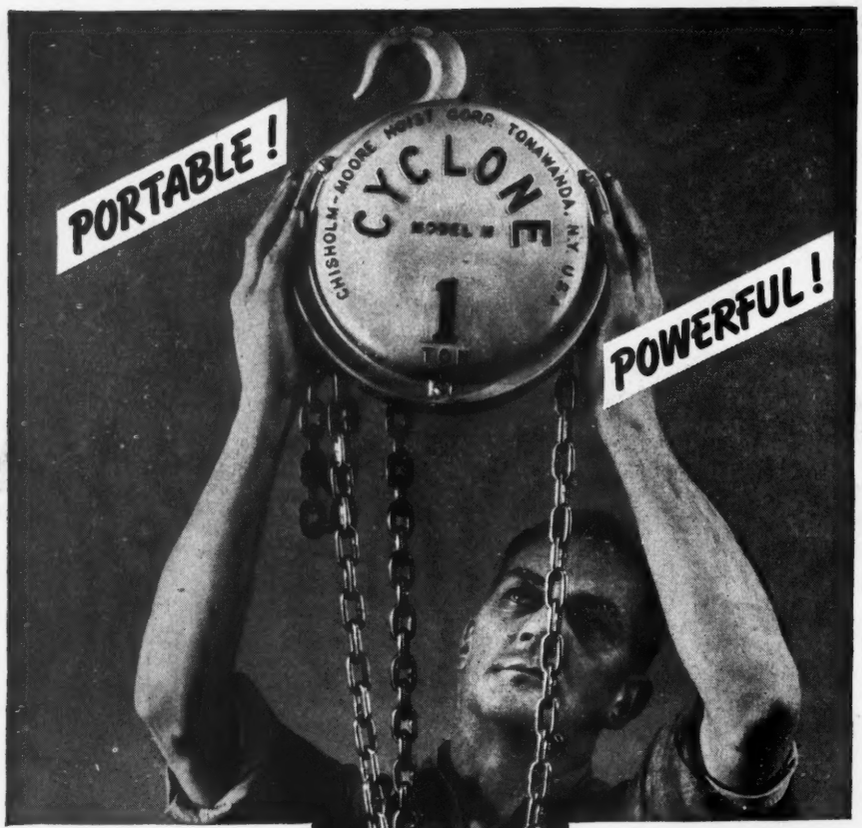
Model M • HEAVY DUTY HIGH SPEED HOIST • Capacities from ¼ ton up



96% EFFICIENCY
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42% FEWER PARTS
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1 ton weighs 35 lbs.
2 ton weighs 59 lbs.
3 ton weighs 90 lbs.

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had been in contact with nothing more substantial than air. While still warm, the bottles showed a strength of 82,000 psi. on the outside surface. After a few days, without handling, the or to 65 percent of the original value. strength had dropped to 55,000 psi.,

War Materiel

Speaking at the general luncheon, Clinton K. Royce, executive vice-chairman of the Navy Packaging Board, said that the Navy's secret weapon in World War II, which enabled the fleet to deliver knockout blows to the Japs during the final year of the war, was the supply system that delivered material preserved, packaged and handled so as to be of maximum ultimate utility.

The confusion in procurement of materials, that resulted from the competition between Army and Navy, has been eliminated by the formation, in late 1944, of the Navy Packaging Board, the Army Packaging Board, and the Air Force Packaging Board. These three boards serve as coordinating committees to bring about uniformity of procedures and technics. Chairman of these service groups make up the Munitions Board Packaging Committee, which is in effect a council to form procedures in all services and bureaus handling like materials.

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